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CRPL-F 252 PART A

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PART A  
IONOSPHERIC DATA

ISSUED  
AUGUST 1965

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## IONOSPHERIC DATA

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## IONOSPHERIC DATA

The CRPL-F series bulletins are issued as part of the responsibility of the Central Radio Propagation Laboratory for the exchange and distribution of ionospheric and related geophysical data. Part A, "Ionospheric Data," and Part B, "Solar-Geophysical Data," of the CRPL-F series present a variety of data collected by CRPL in the course of its research and service activities. Through the CRPL-F series, as part of the general exchange of scientific information, these data are made available for use by others in research on radio propagation and the ionosphere, and in other geophysical applications.

In the CRPL-F series, Part A, tables of monthly median values of vertical-incidence ionospheric data are presented accompanied by graphs of critical frequencies and  $M(3000)F_2$ . The tables include the number of values entering into the median determination (count). When available, the upper and lower quartile values (indicated by UQ and LQ) are listed for  $f_oF_2$ ,  $f_oF_1$ ,  $f_oE_s$ ,  $M(3000)F_2$ ,  $h'F_2$  and  $h'F$ . Space limitations do not permit inclusion of quartile values for the other characteristics. The tables are prepared by machine methods and the graphs are plotted automatically.

The tables and graphs present the ionospheric data as received from the originating laboratory. Responsibility for the accuracy and reliability of the data rests entirely with the originator. Medians of data for the U.S. stations are computed by CRPL in accordance with the recommendations of the World-Wide Soundings Committee.

Data will appear in the F-series, Part A, only when the complete daily-hourly tabulations have been received by the CRPL or the World Data Center A for Airglow and Ionosphere. In general, priority of publication is given to the most current data. Data received too long after the month of observation may experience an indefinitely prolonged delay before finding space in the F series, Part A.

Information on symbols, terminology and conventions may be found in the "URSI Handbook of Ionogram Interpretation and Reduction of the World-Wide Soundings Committee," edited by W. R. Piggott and K. Rawer (Elsevier, 1961), which supersedes previous documents. A list of symbols is available from CRPL on request.

### Units and Abbreviations of Ionospheric Data Tables

|                           |                           |       |                |
|---------------------------|---------------------------|-------|----------------|
| $f_oF_2$ , $f_oE_s$ - - - | Tenths of a megacycle     | MED - | Median         |
| $f_oF_1$ , $f_oE$ - - -   | Hundredths of a megacycle | CNT - | Count          |
| $h'F_2$ , $h'F$ , $h'E$ - | Kilometers                | UQ -  | Upper Quartile |
| $M(3000)F_2$ - - -        | Hundredths                | LQ -  | Lower Quartile |



## WORLD - WIDE SOURCES OF IONOSPHERIC DATA

THE IONOSPHERIC DATA PRESENTED IN THE 100 TABLES AND GRAPHS OF THIS ISSUE WERE ASSEMBLED BY THE CENTRAL RADIO PROPAGATION LABORATORY FOR ANALYSIS, CORRELATION, AND DISTRIBUTION. THE FOLLOWING ARE THE SOURCES OF DATA.

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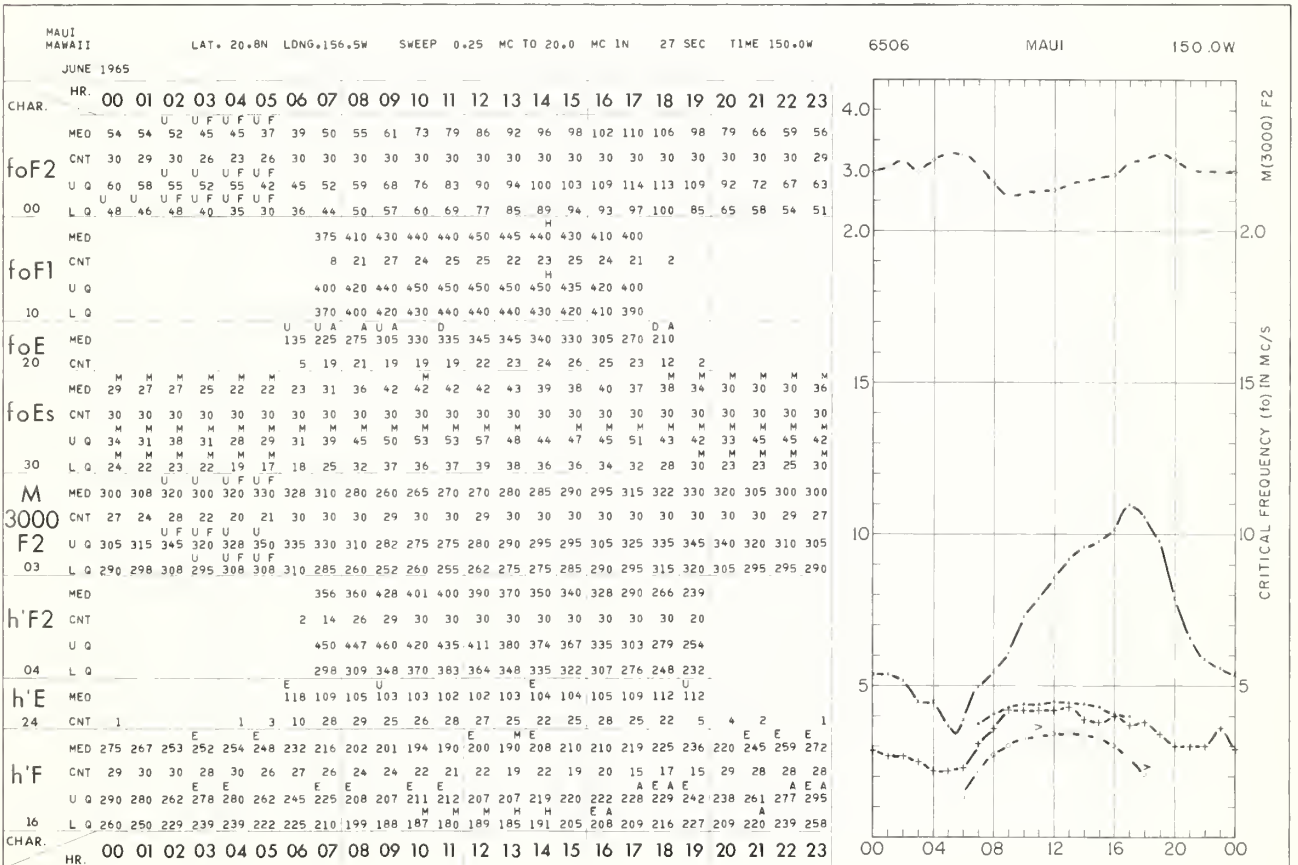
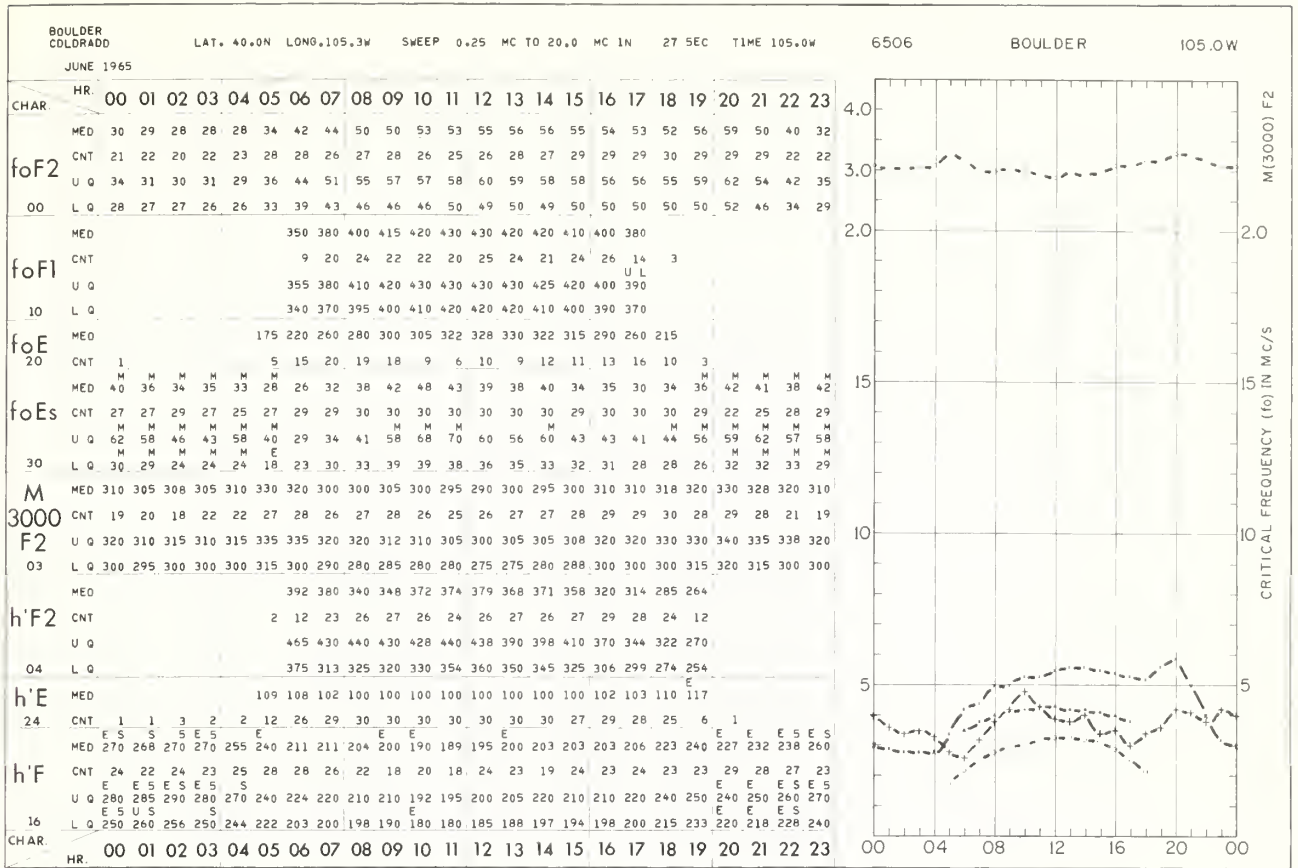
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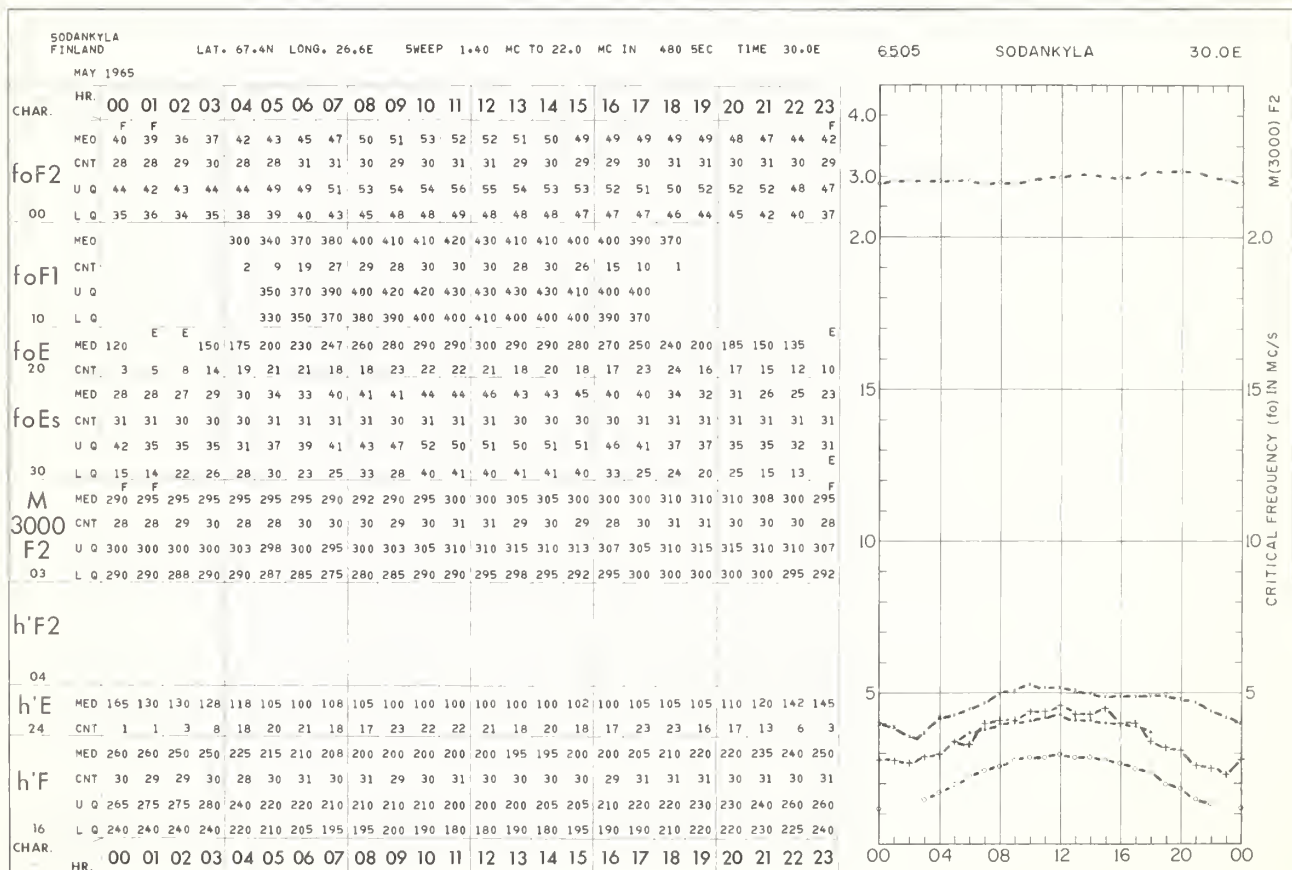
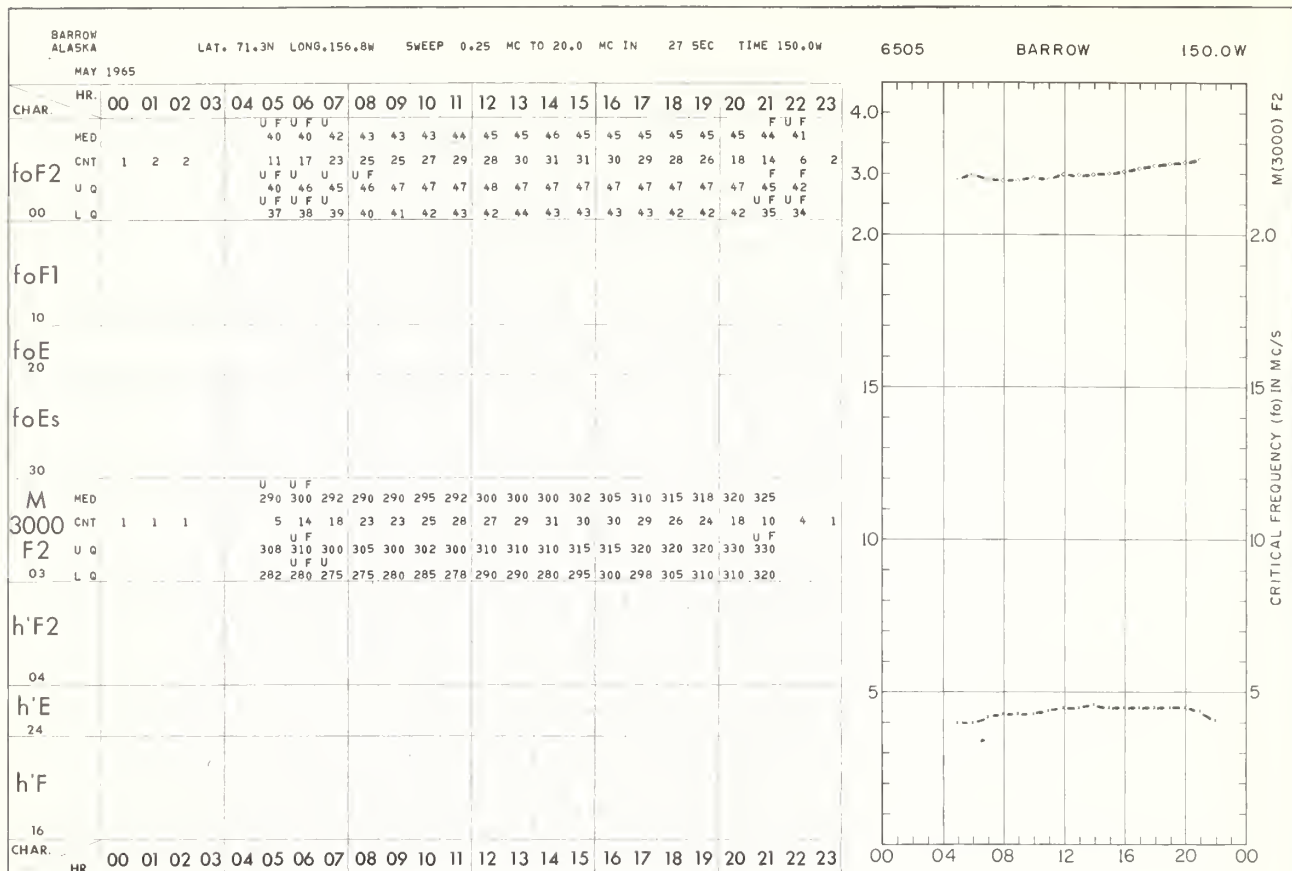
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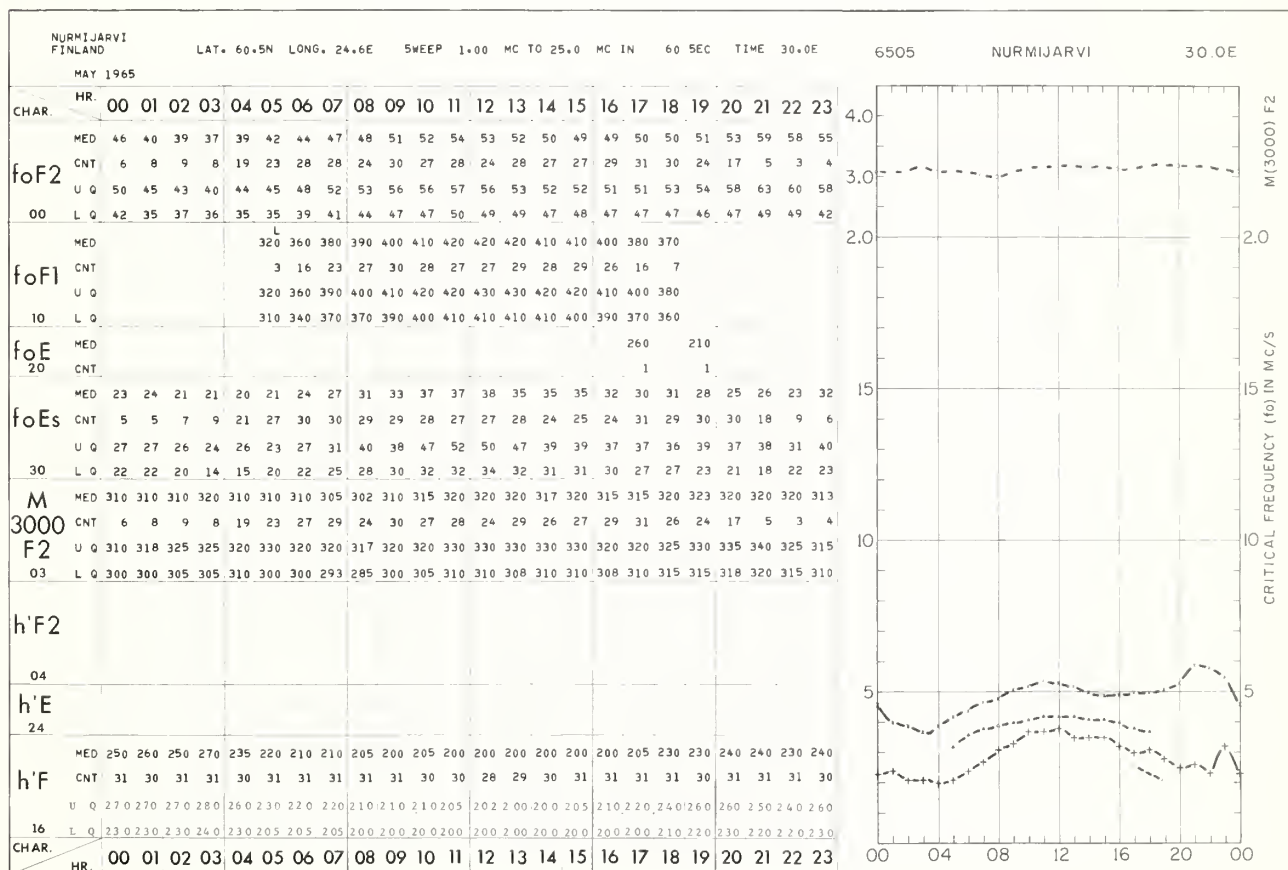
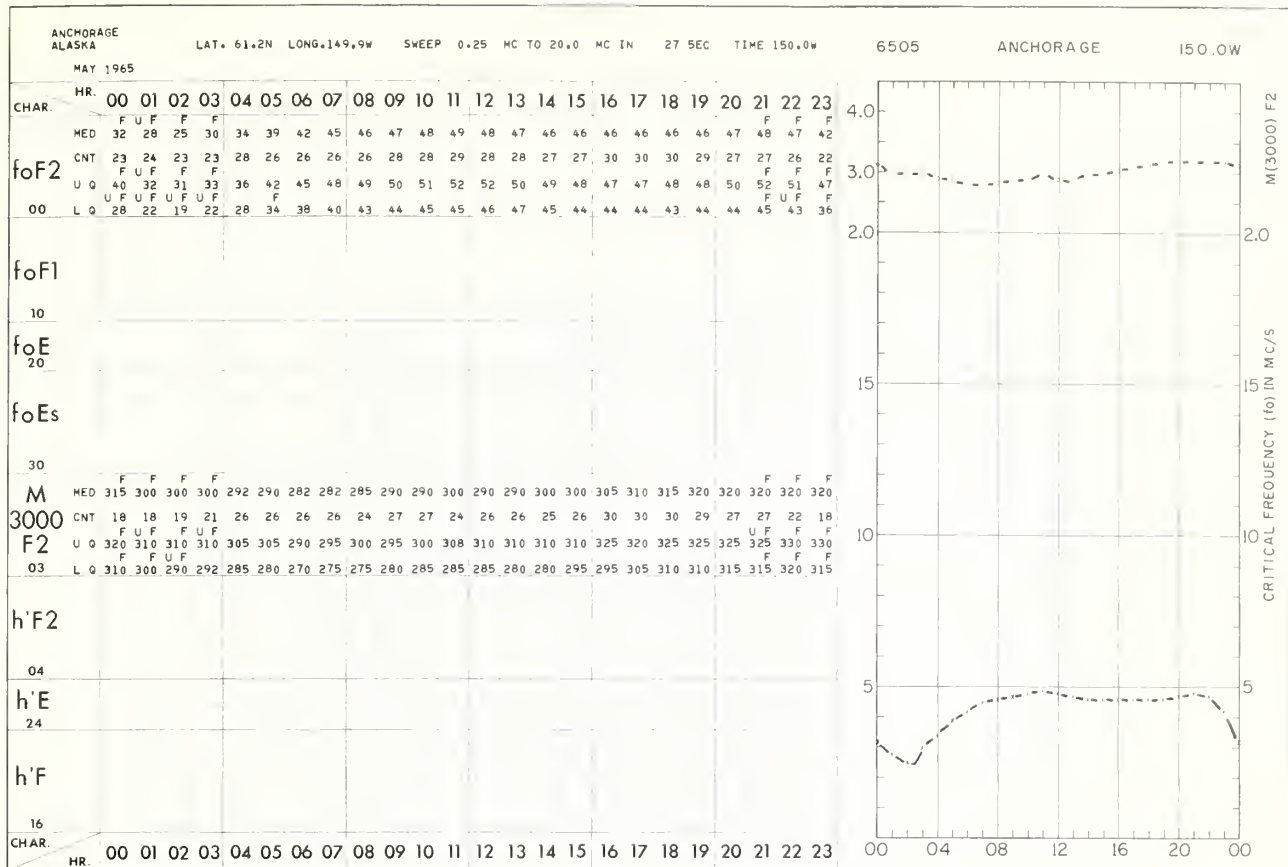


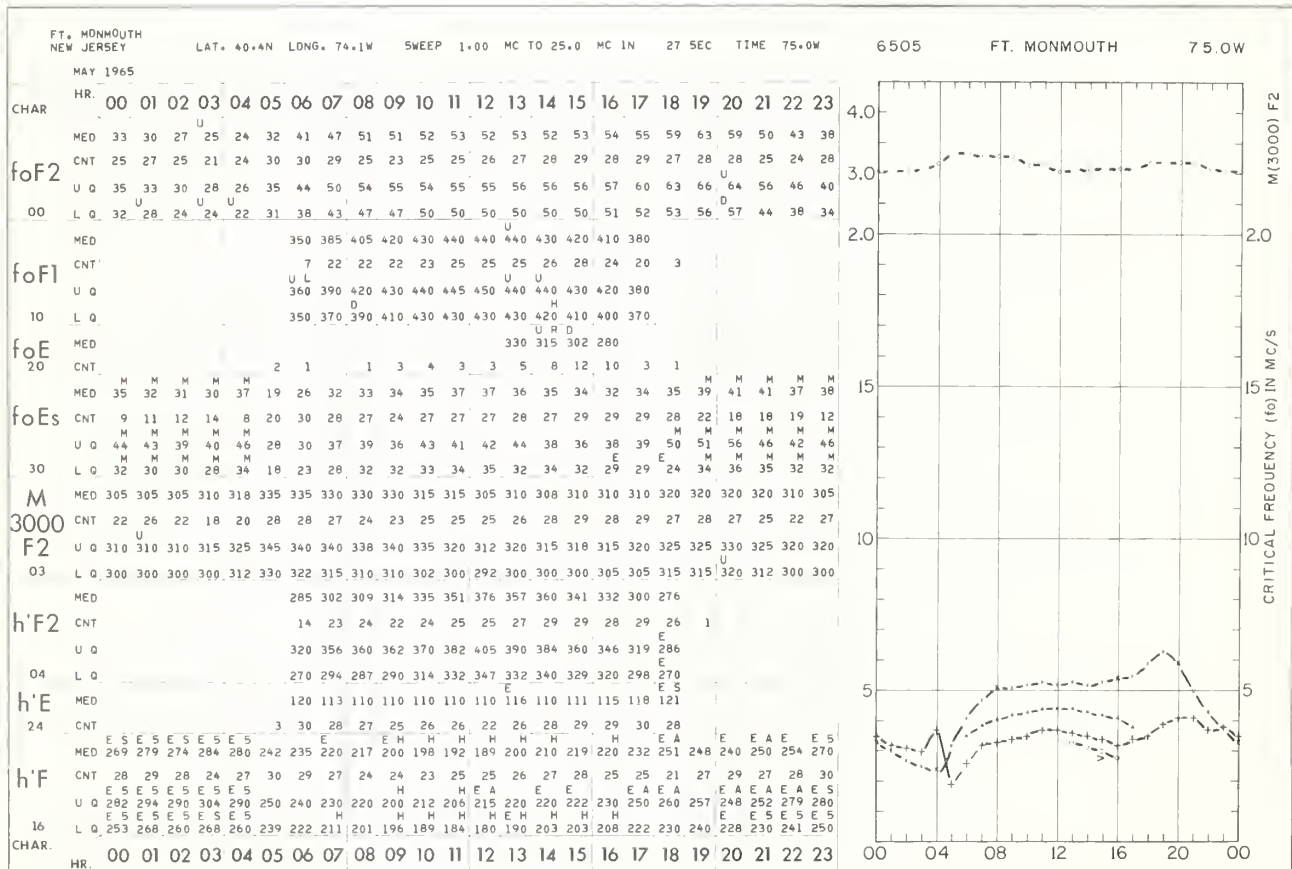
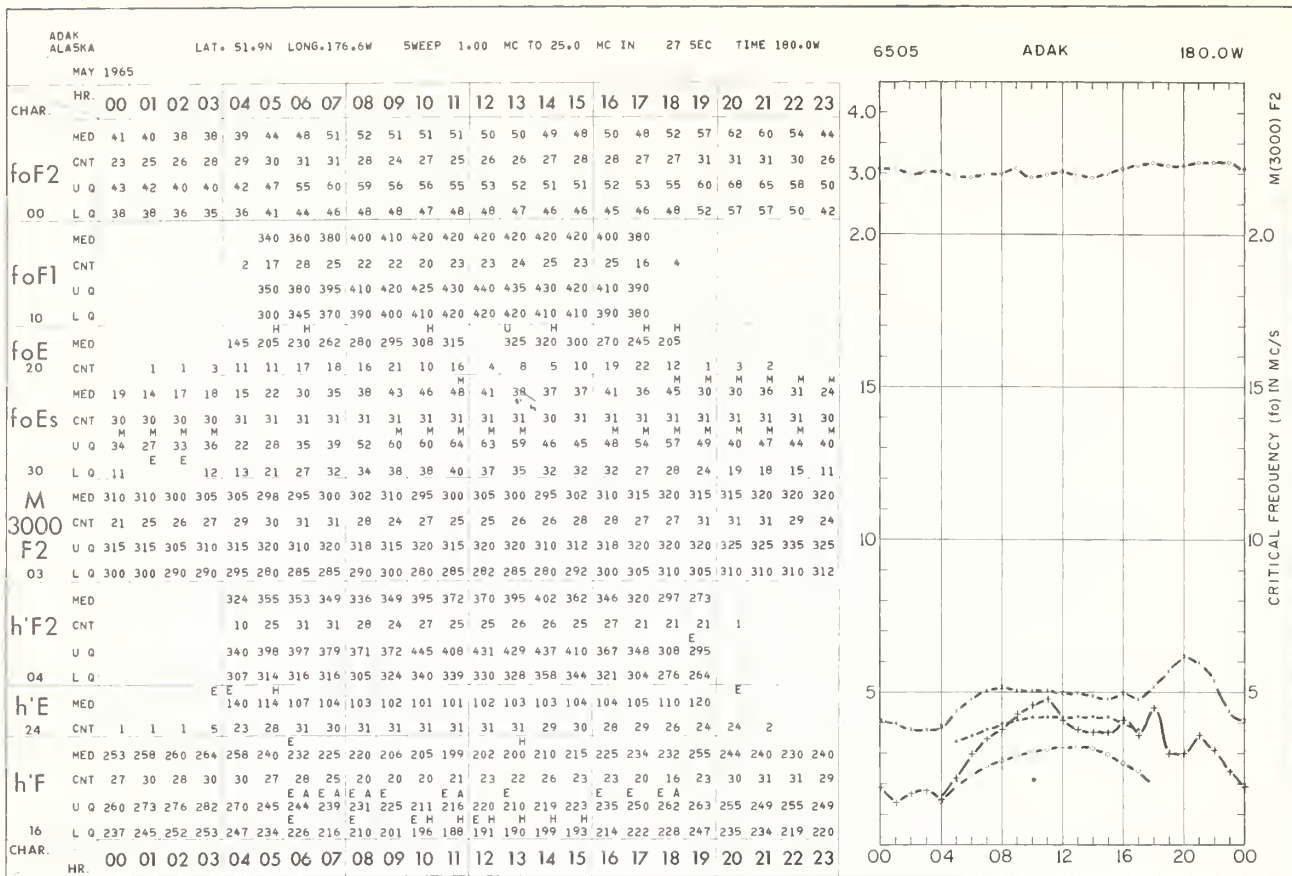
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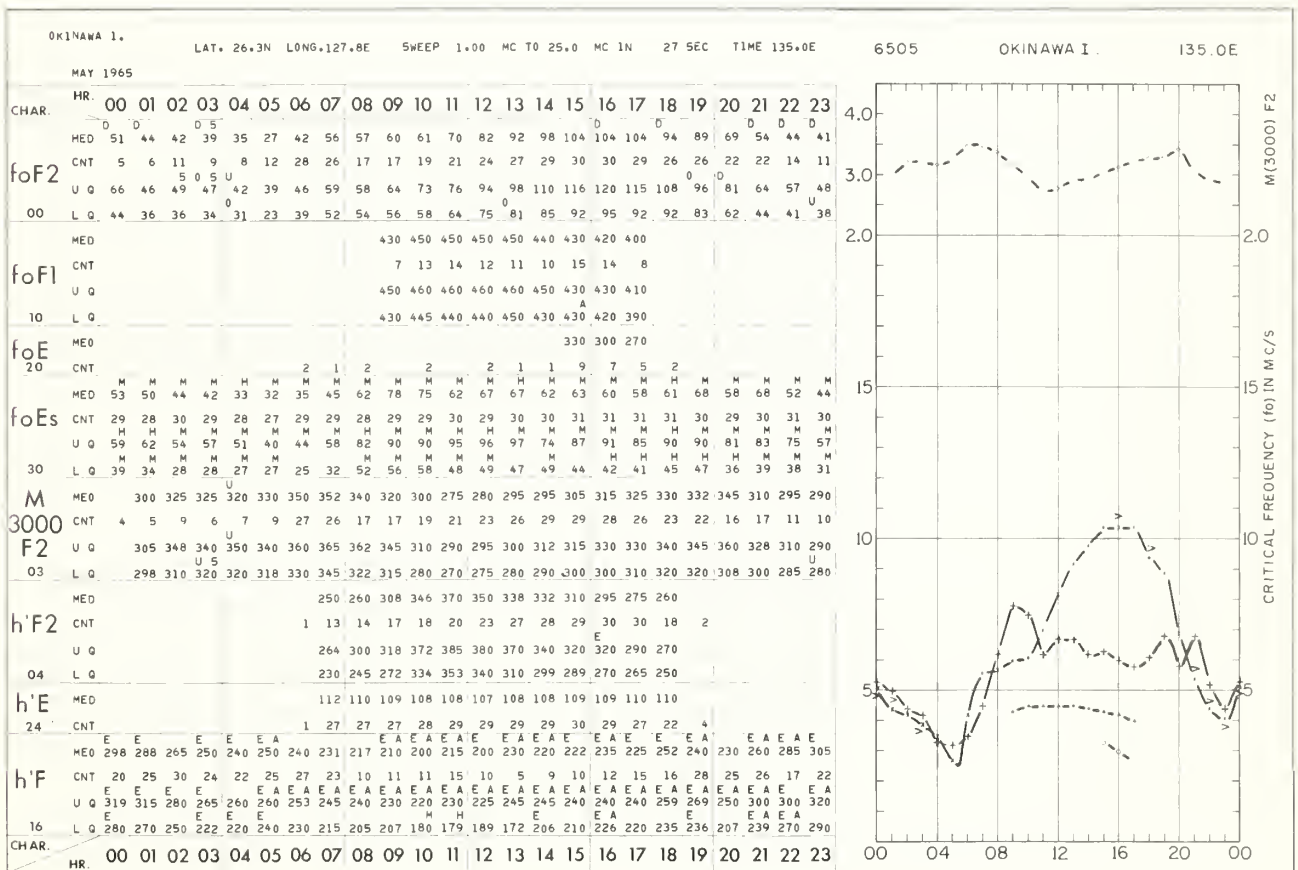
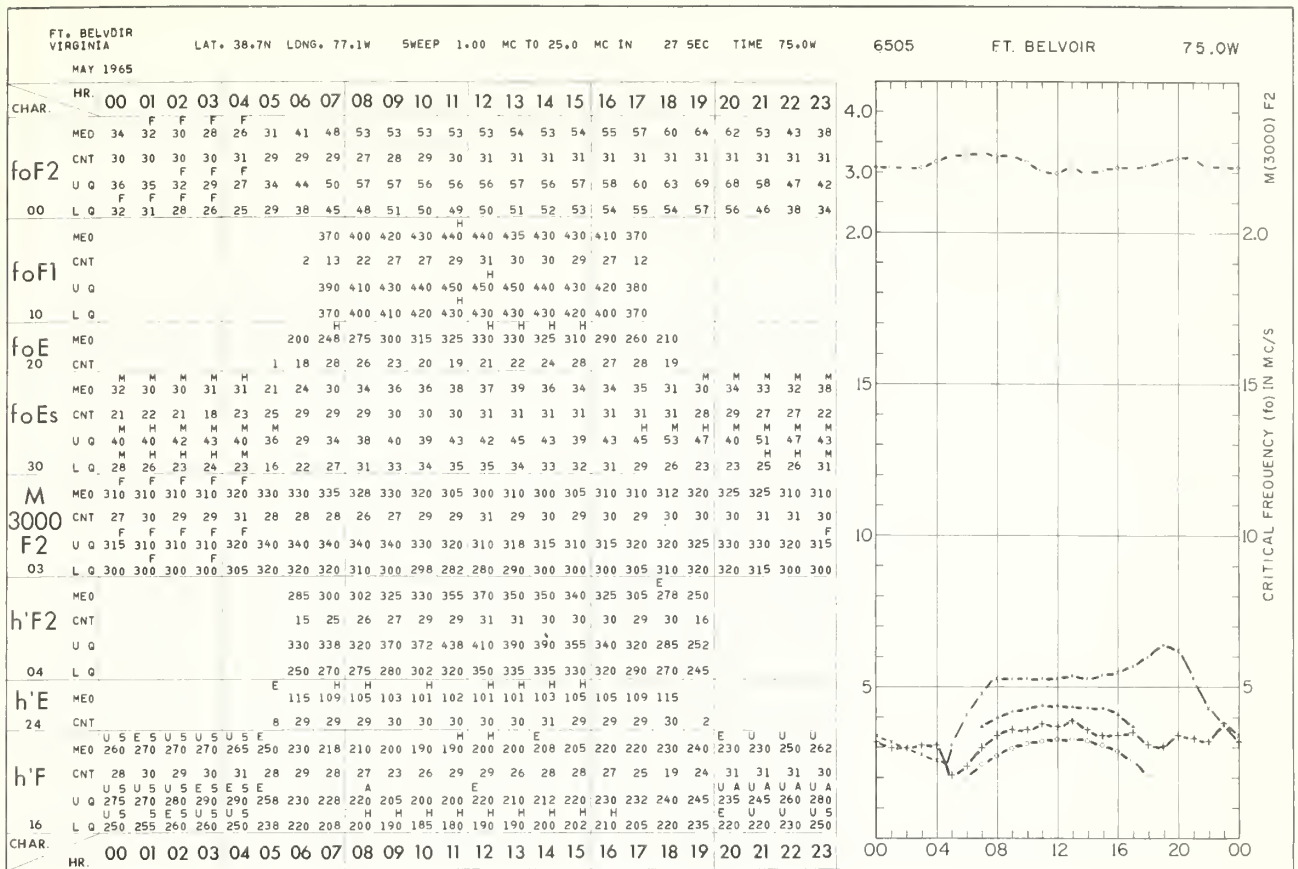


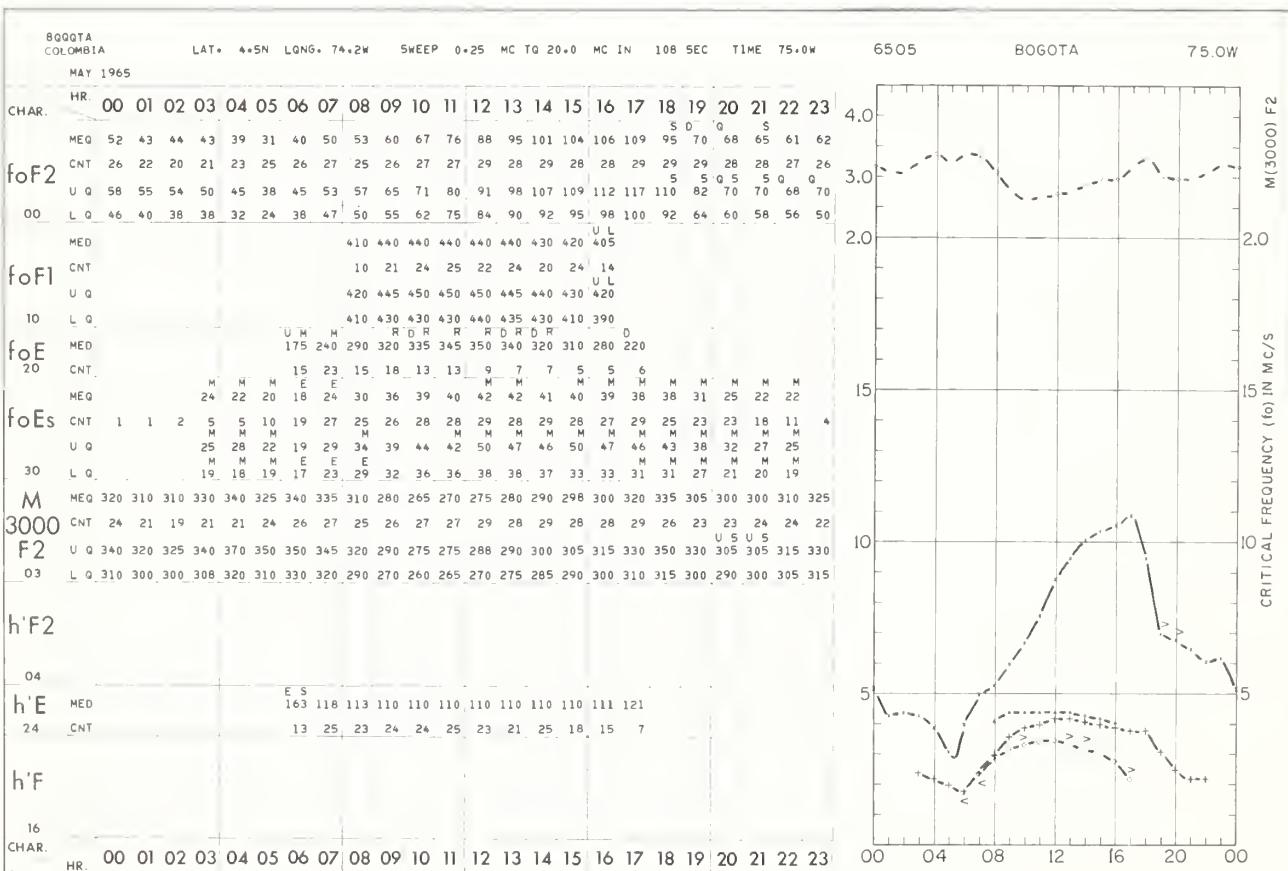
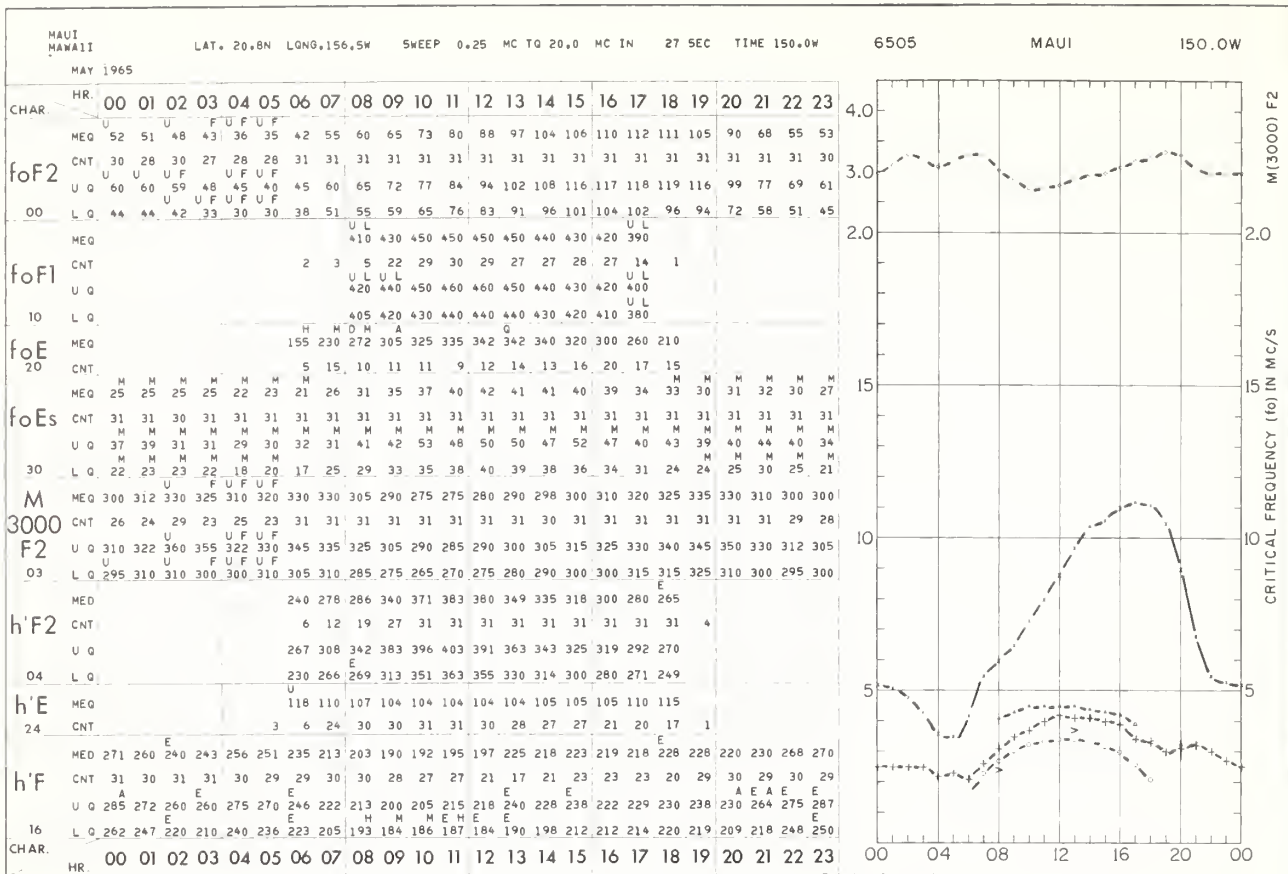


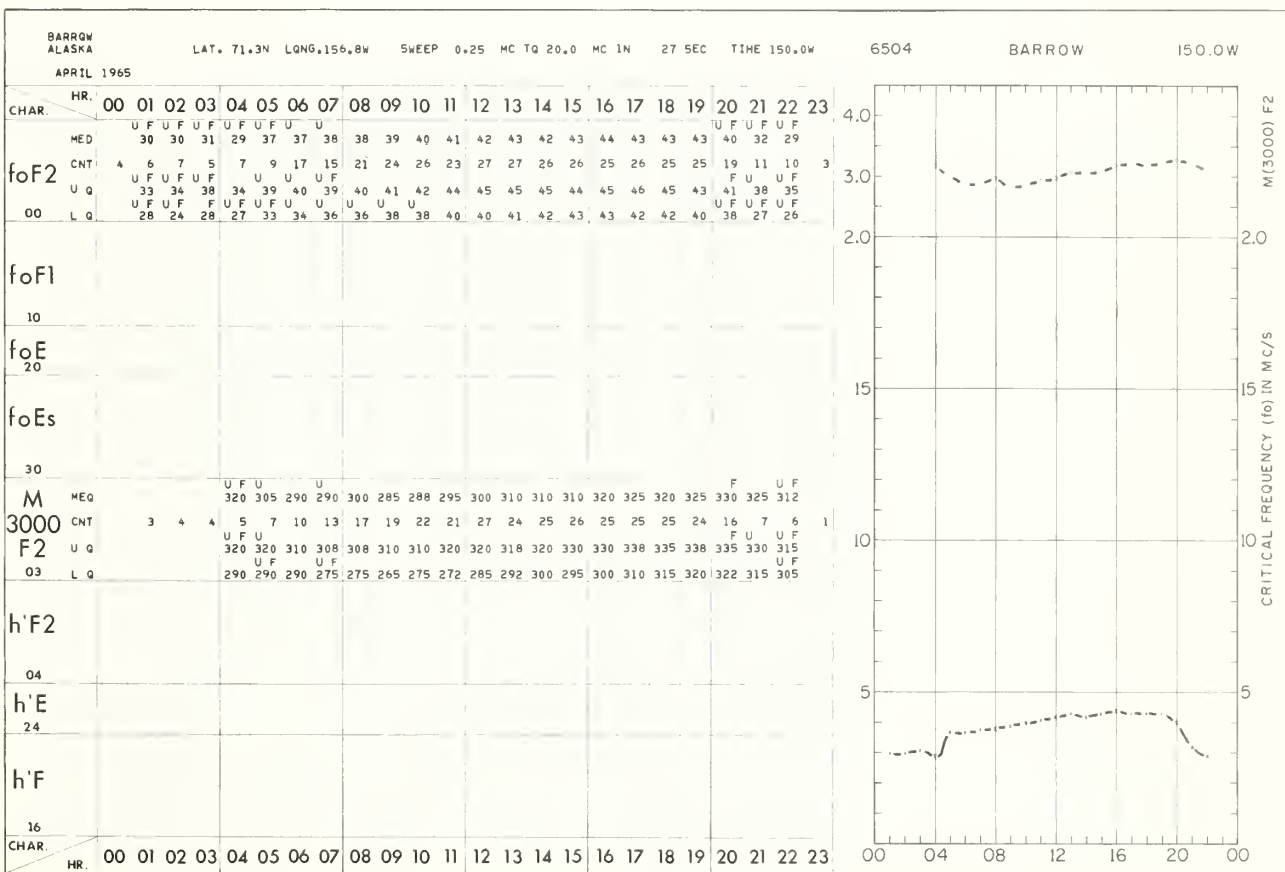
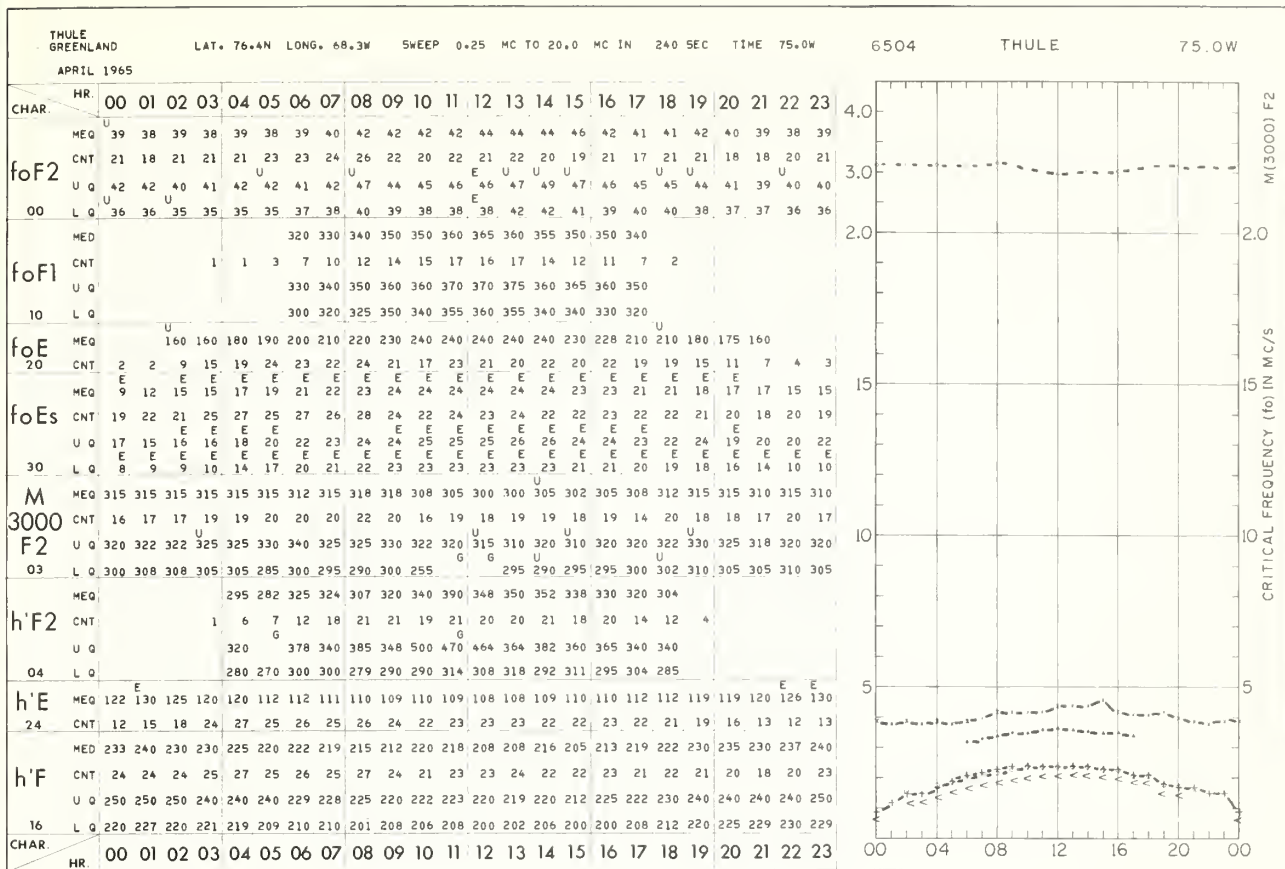


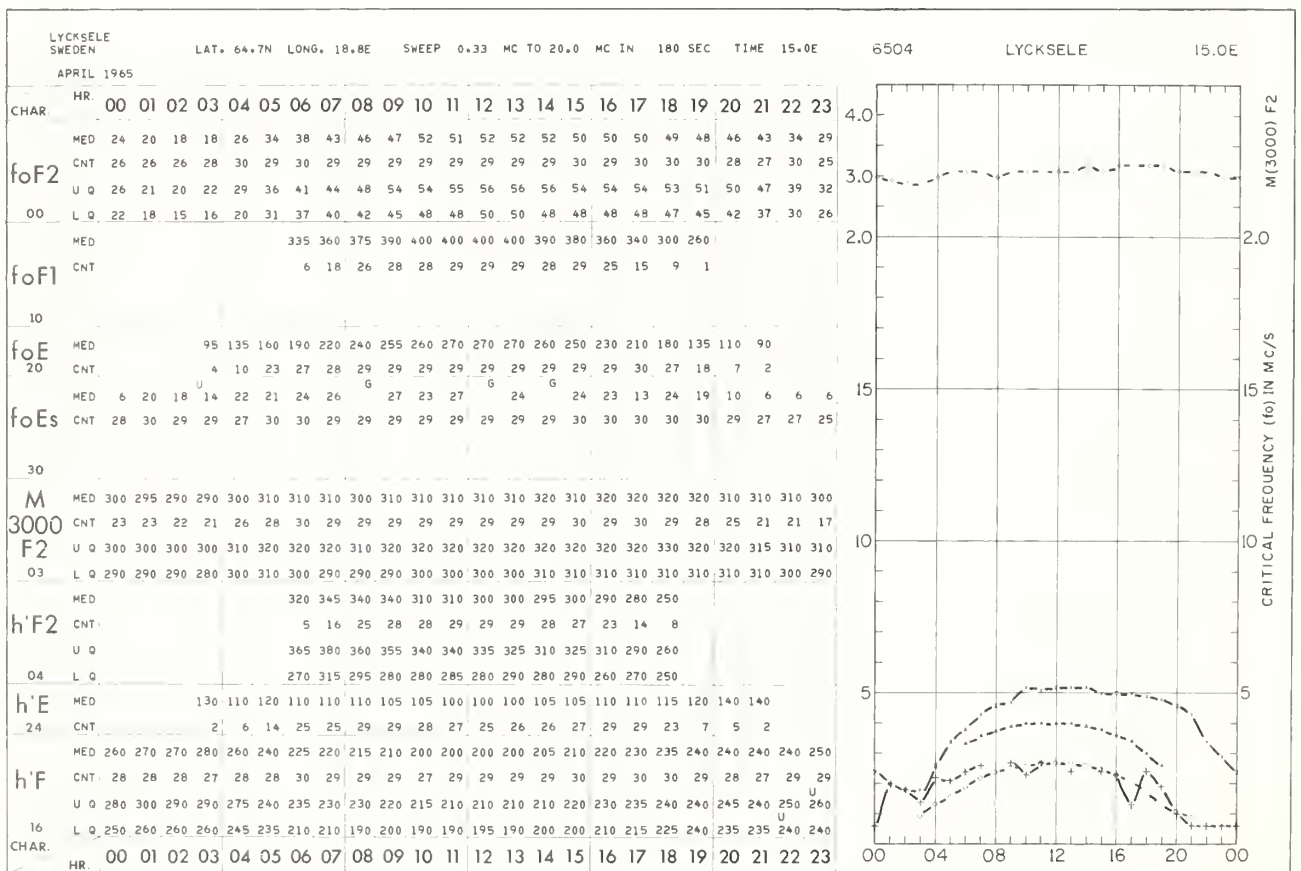
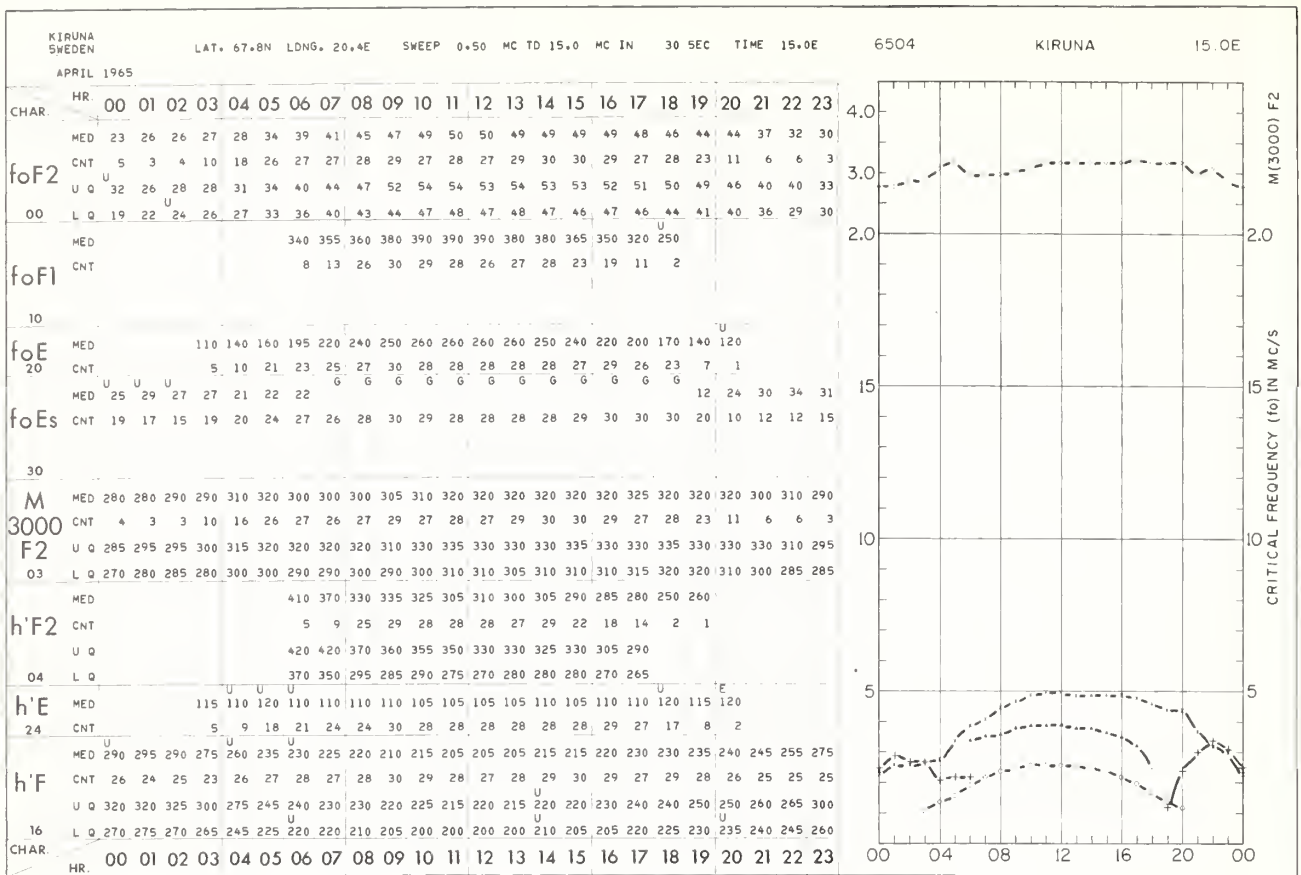




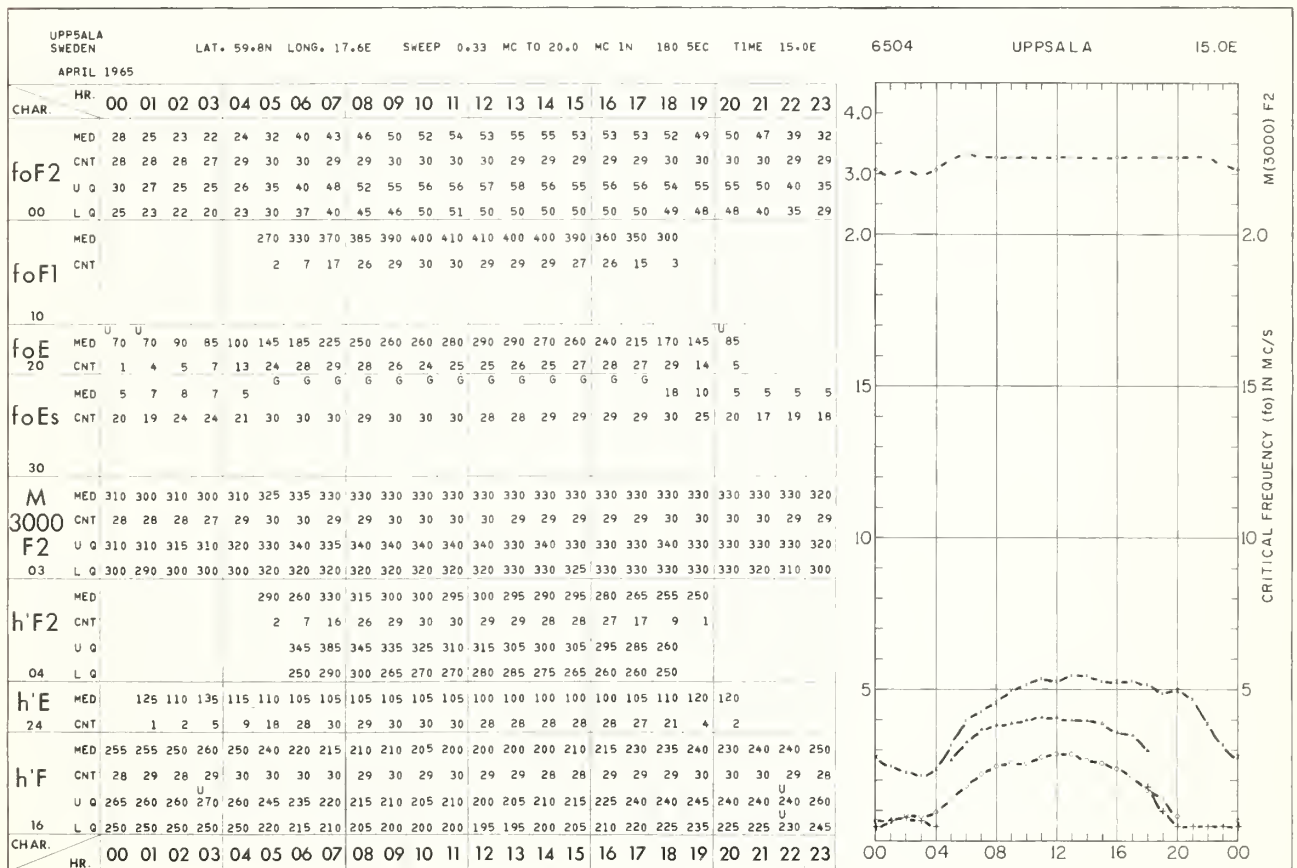
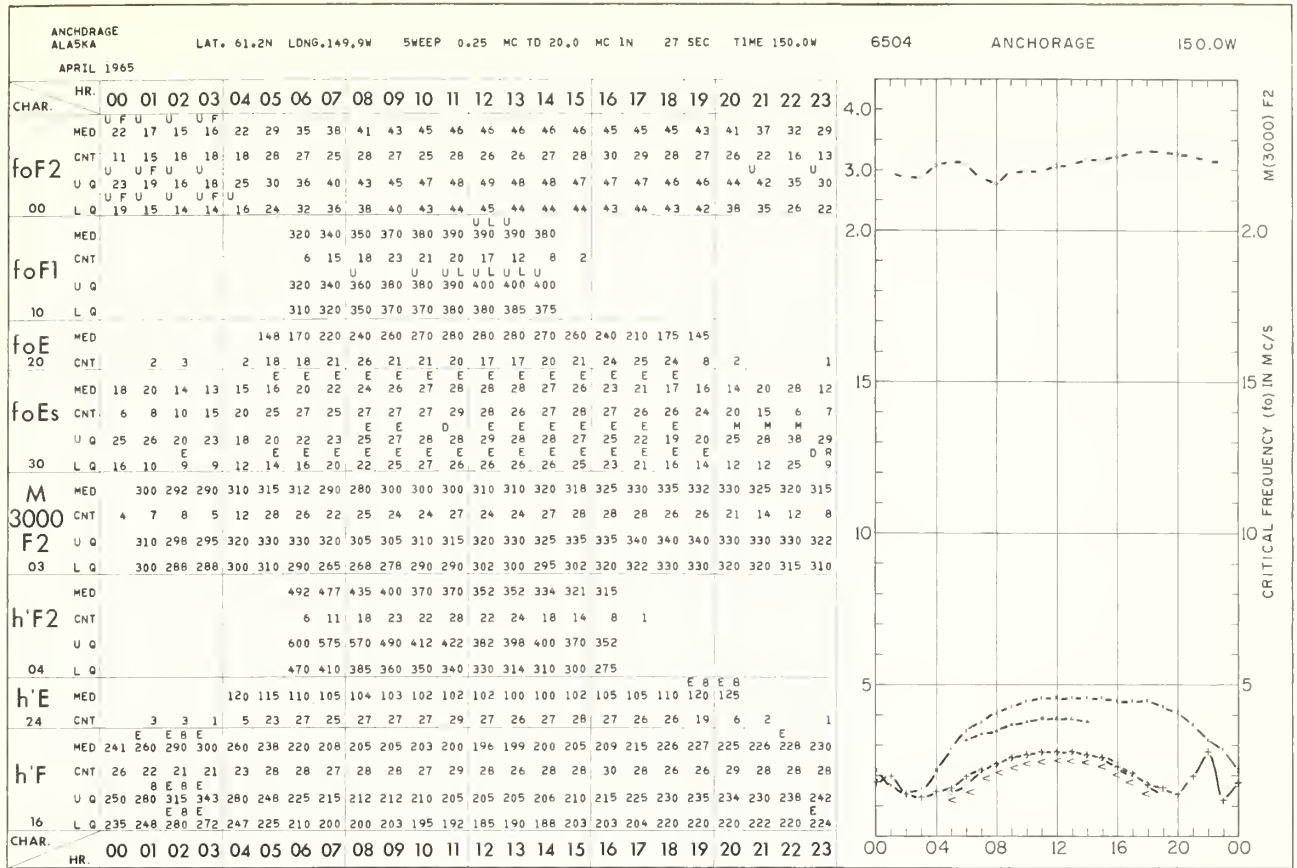


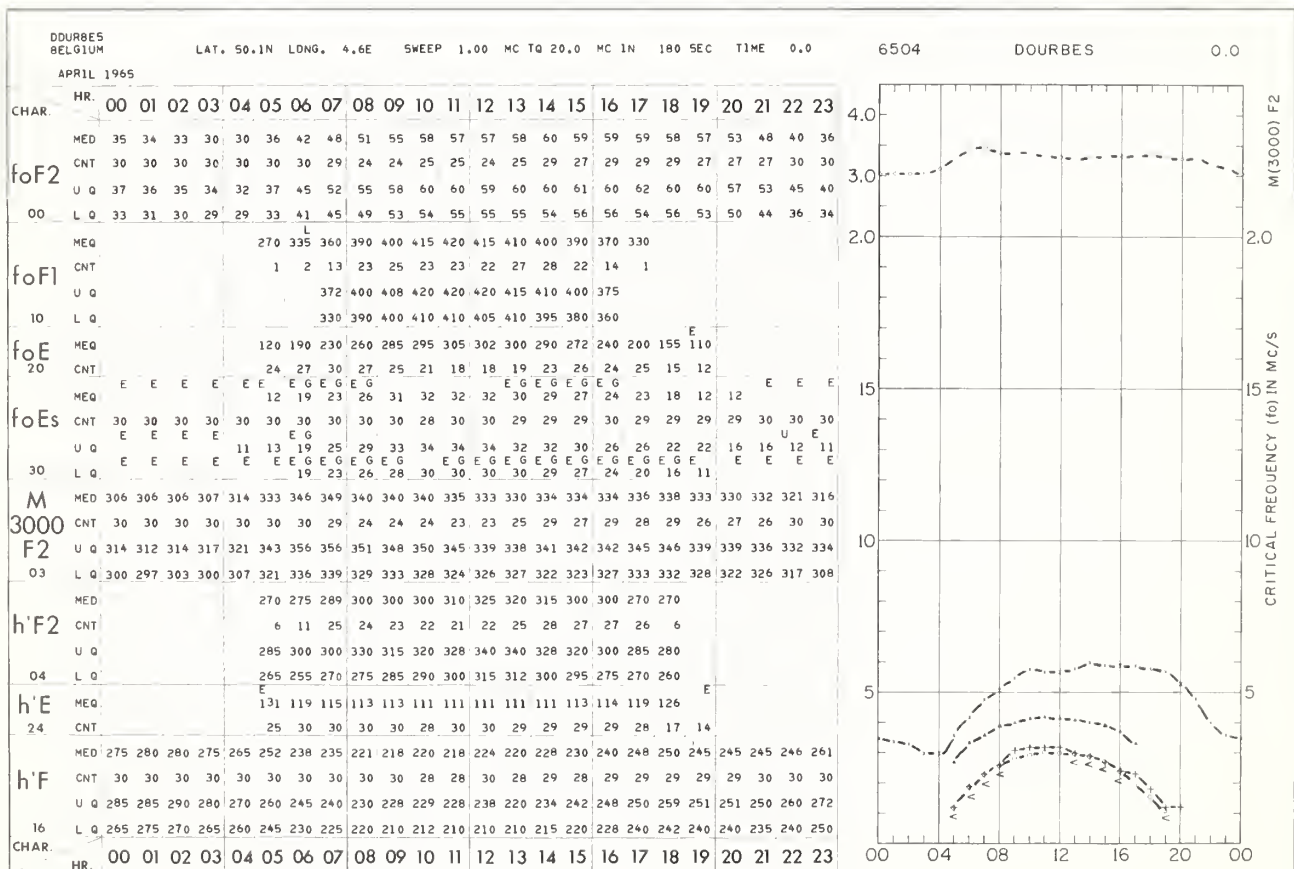
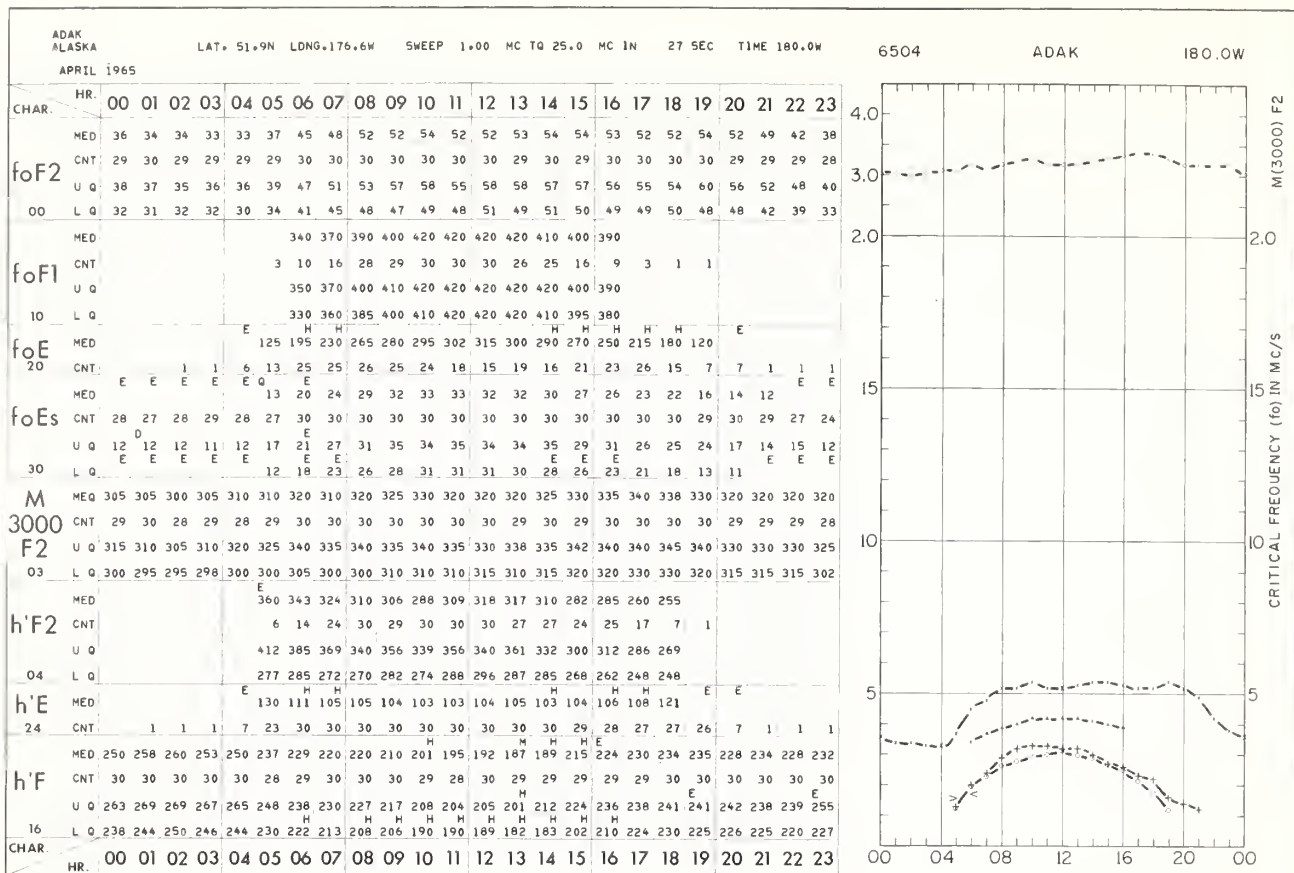


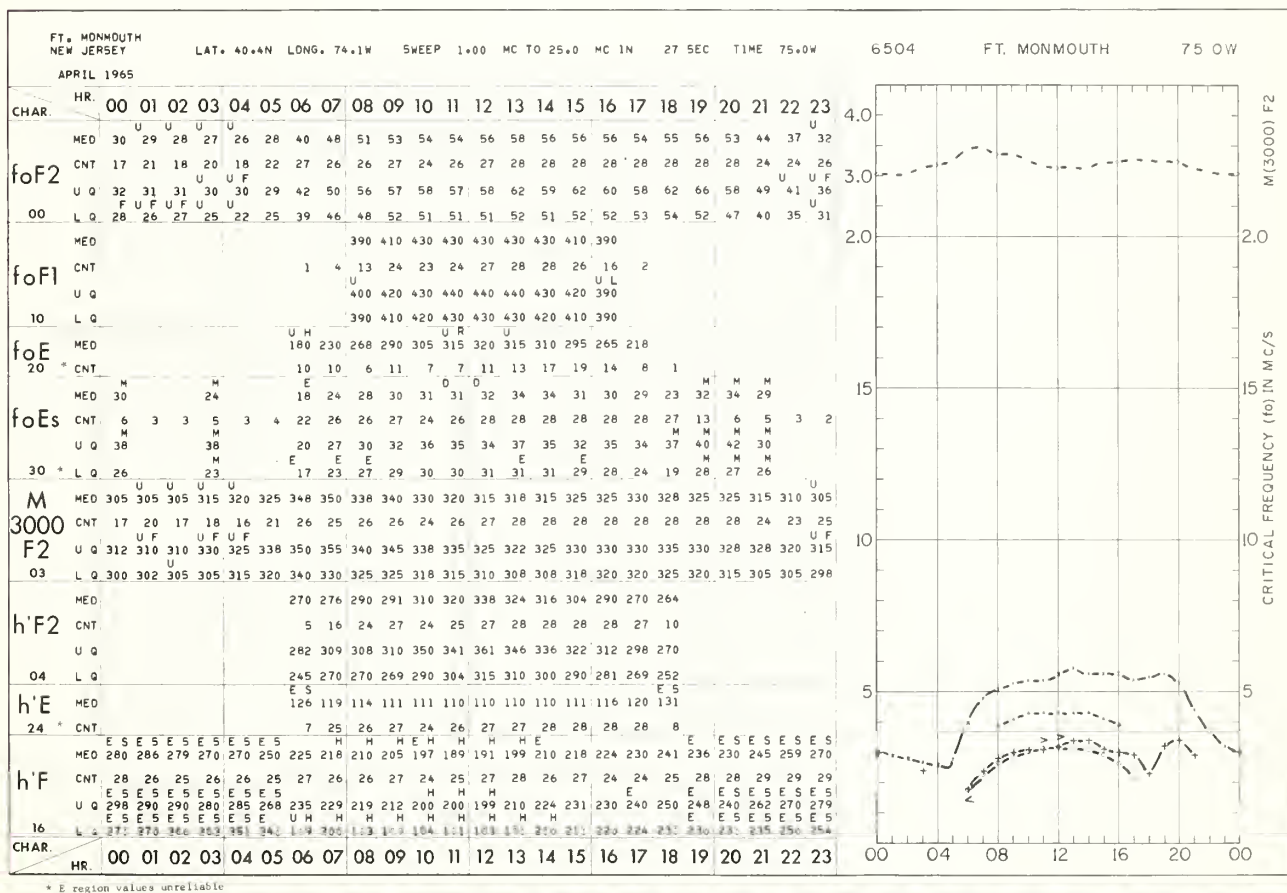
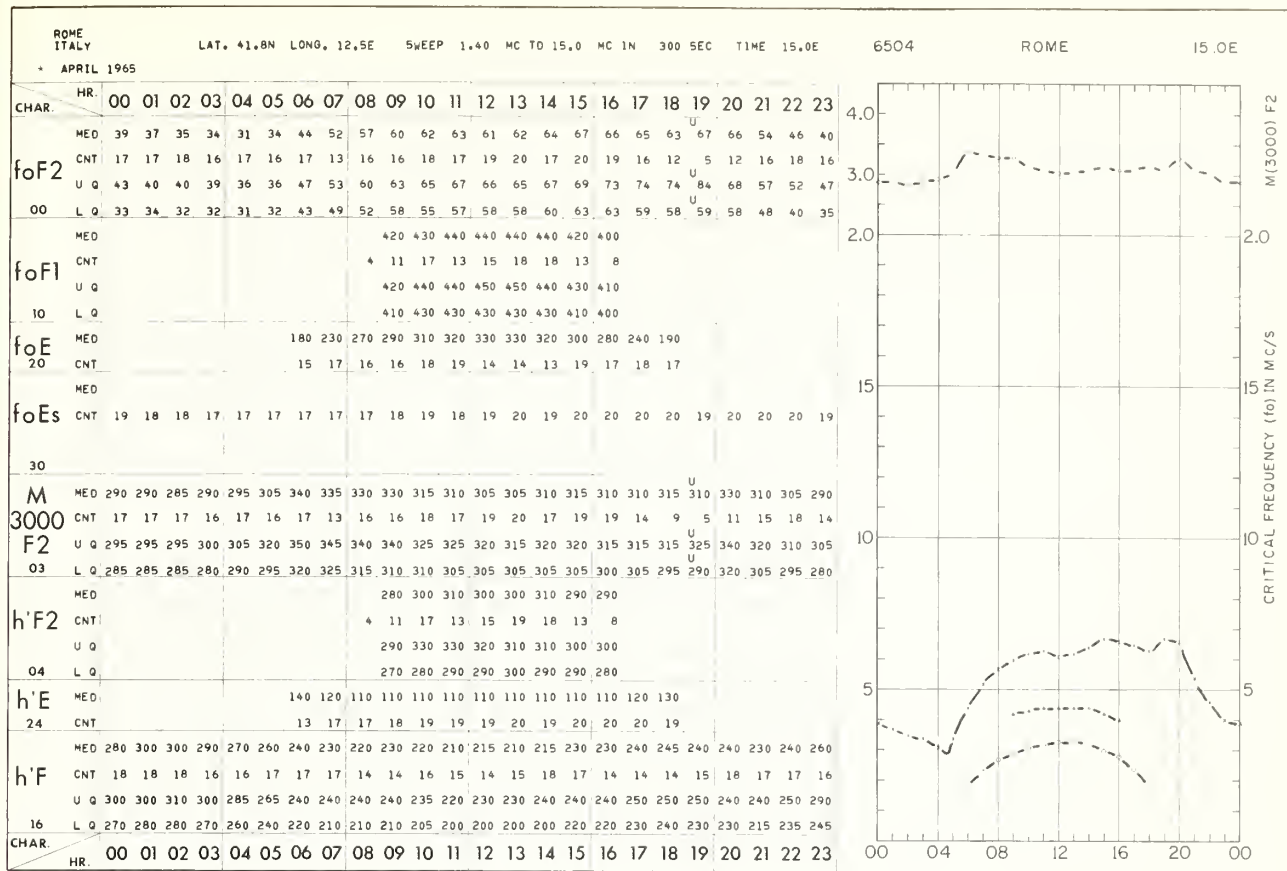




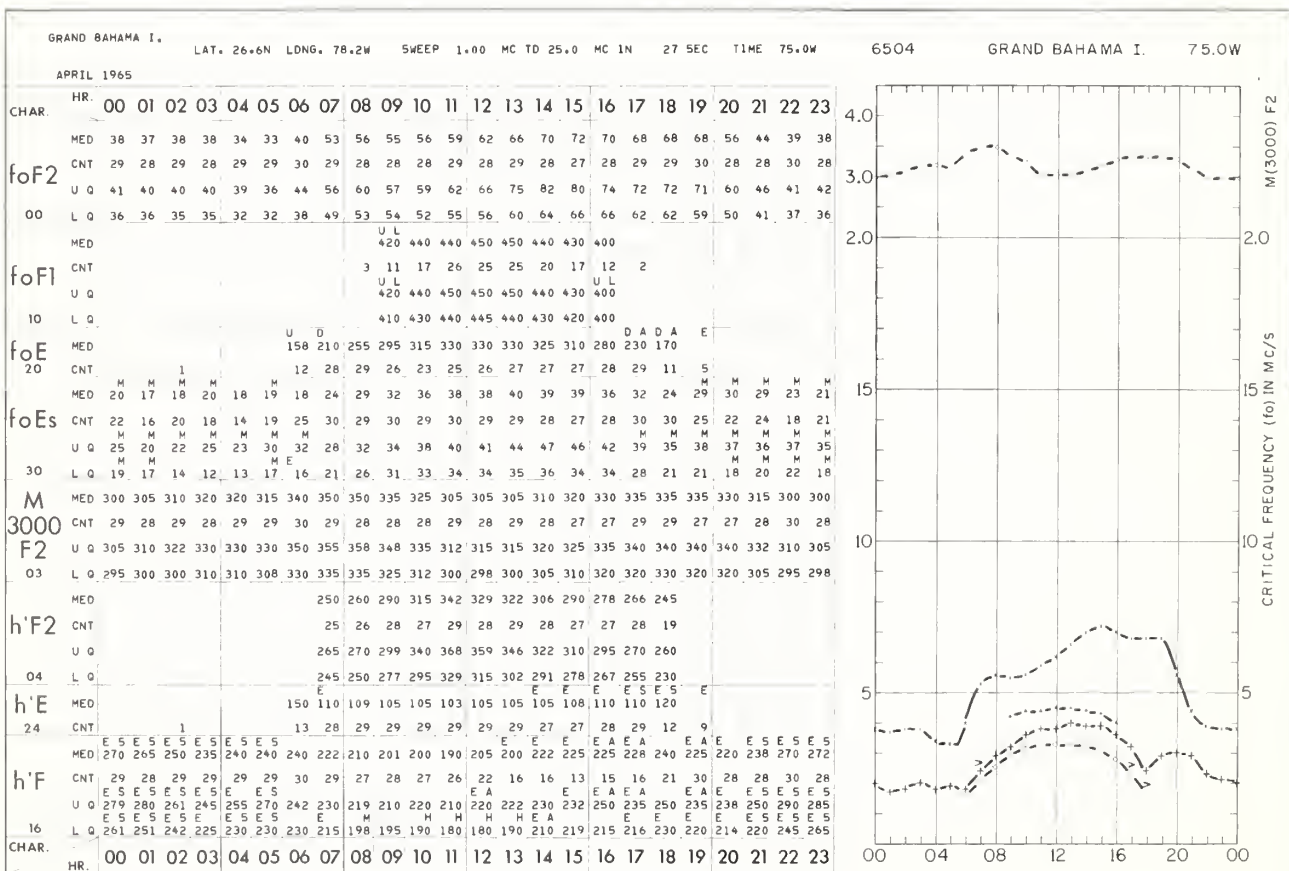
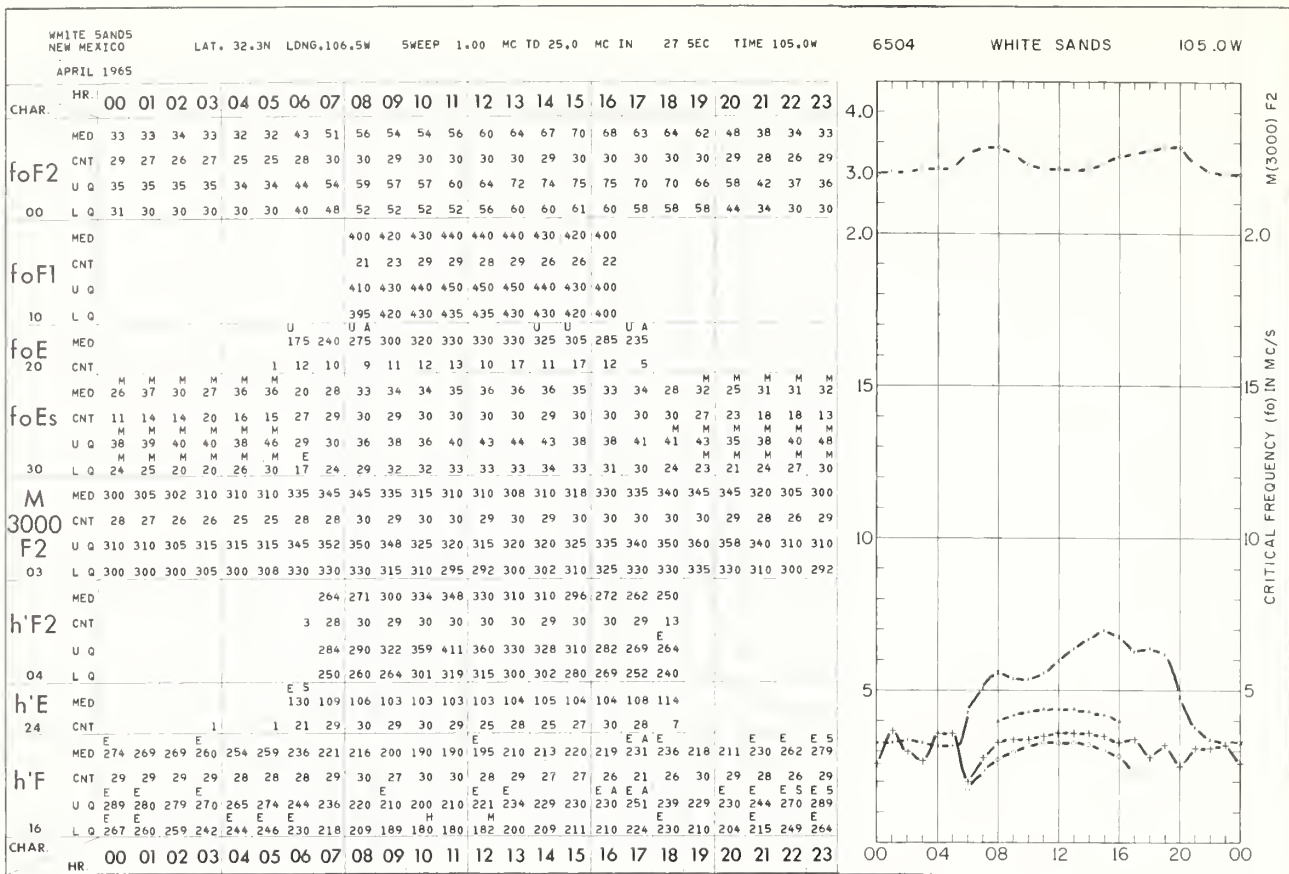


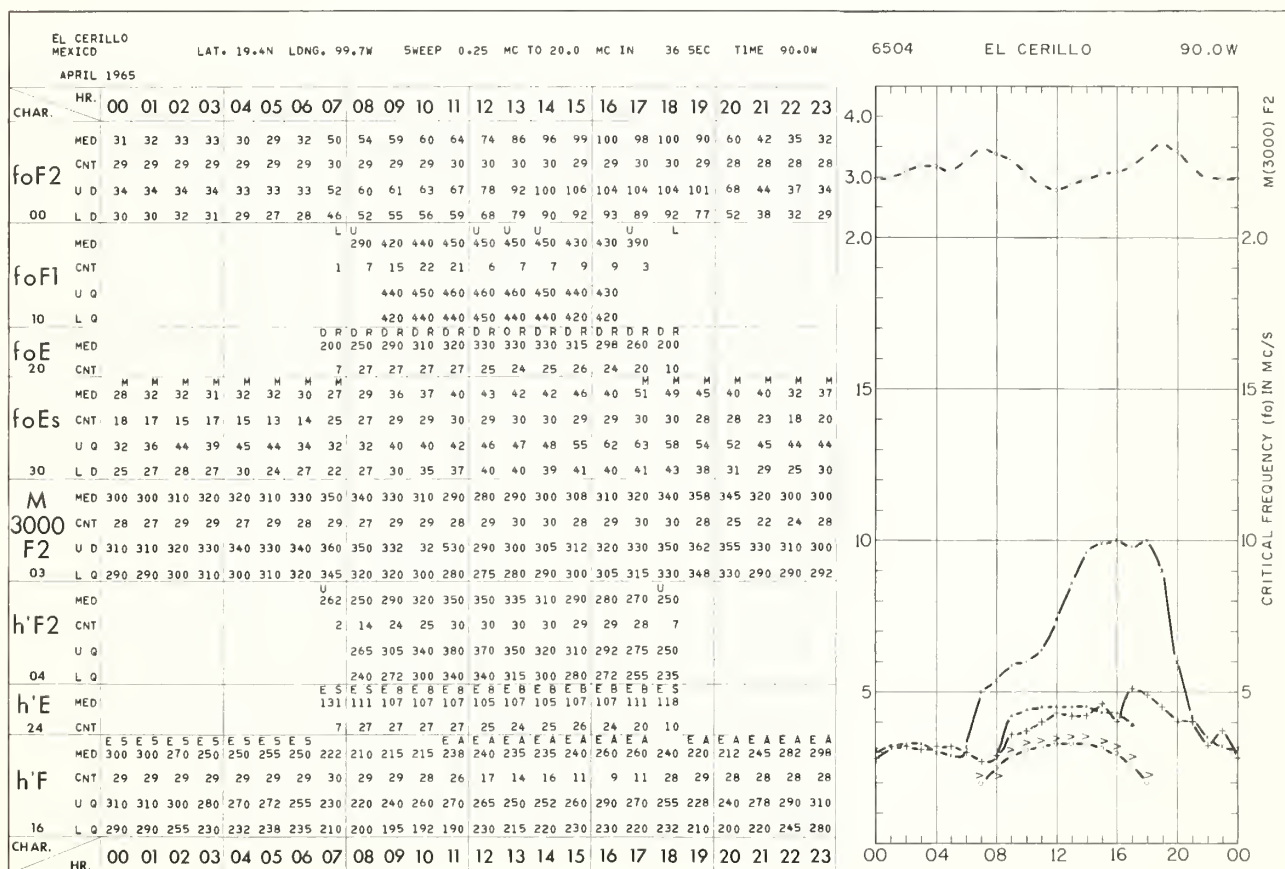
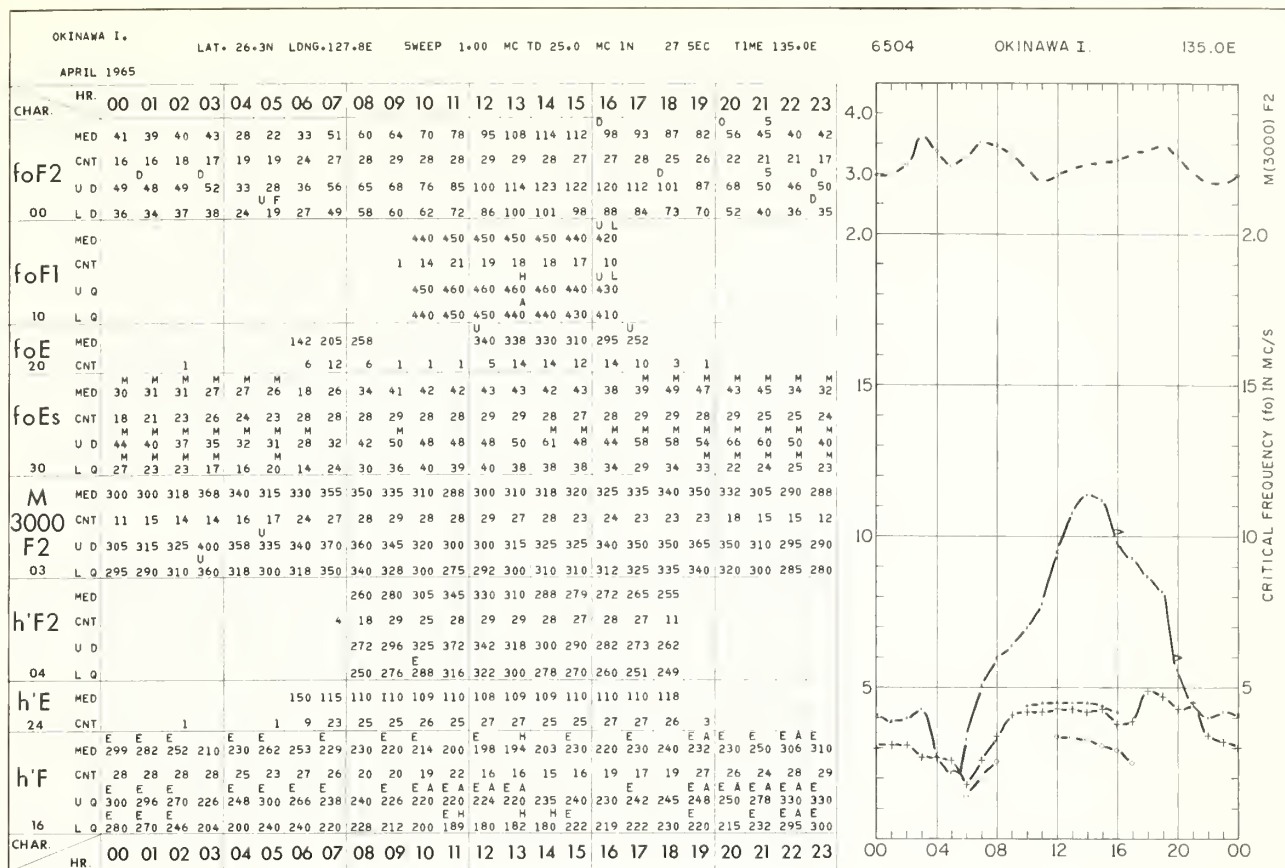


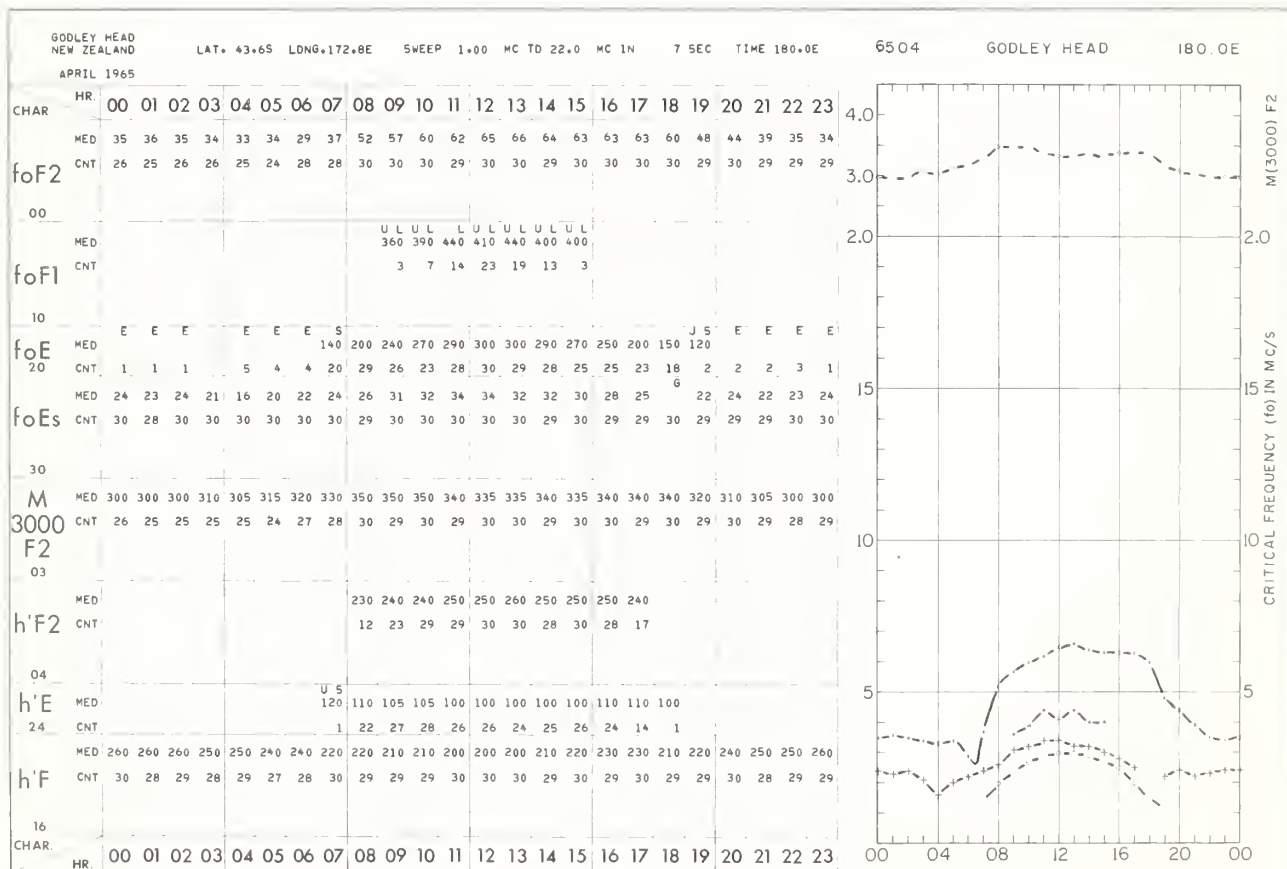
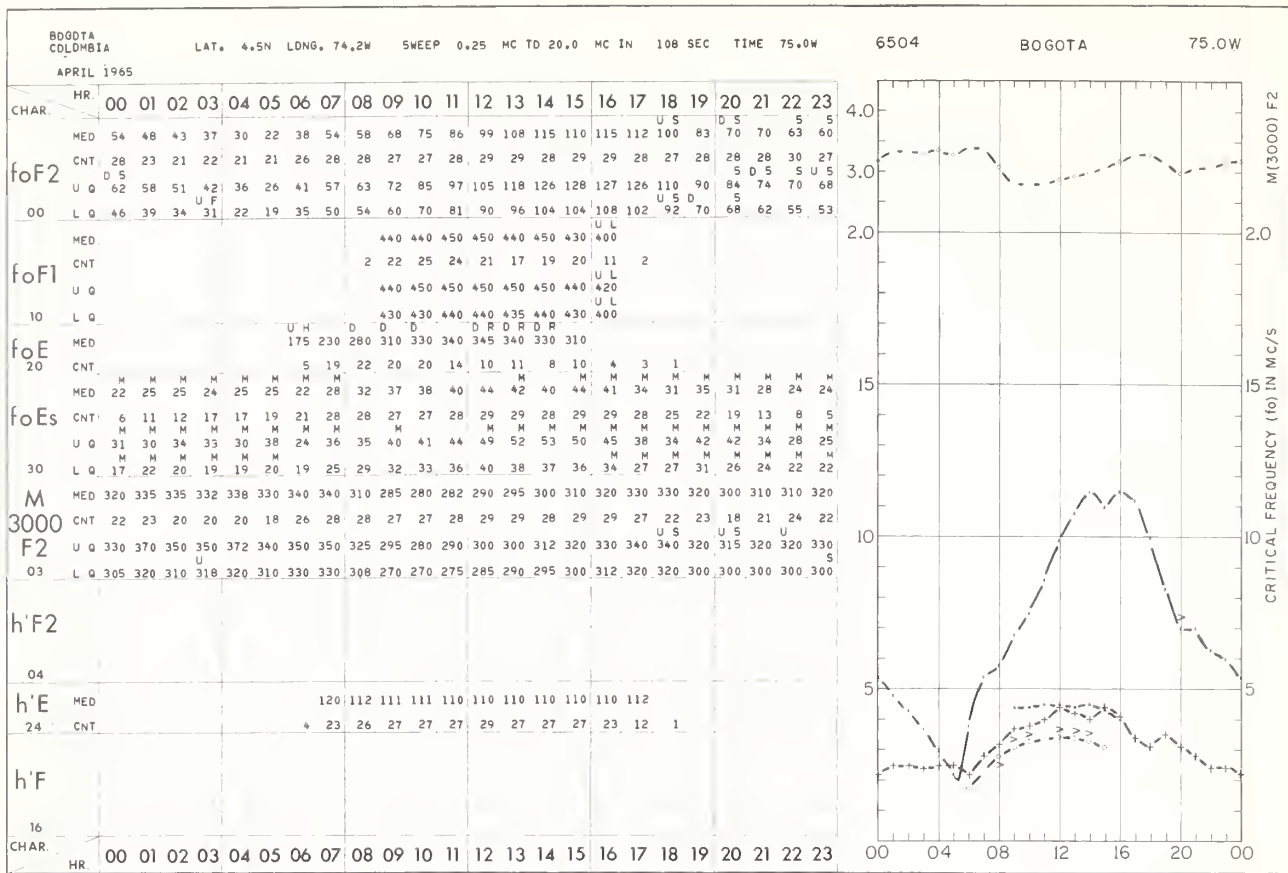


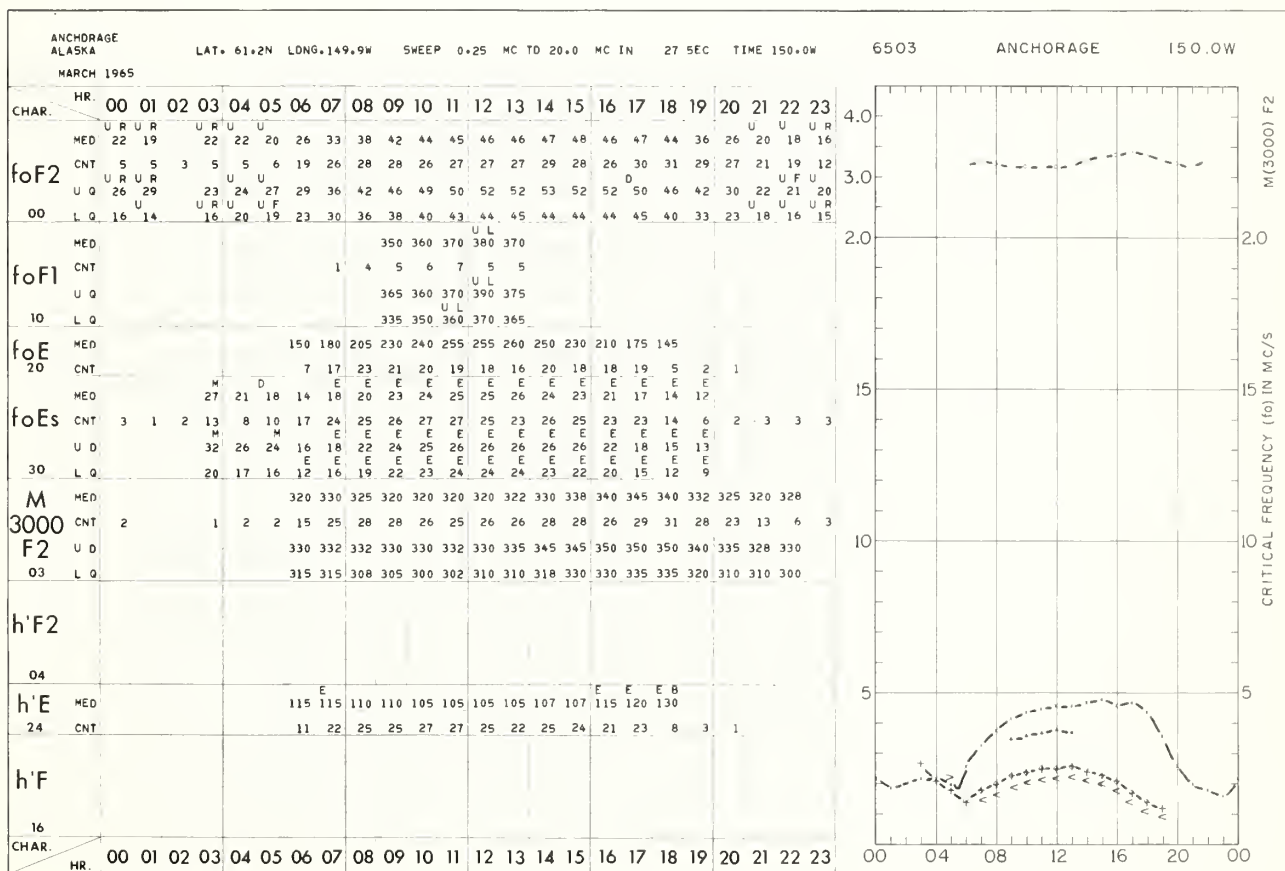
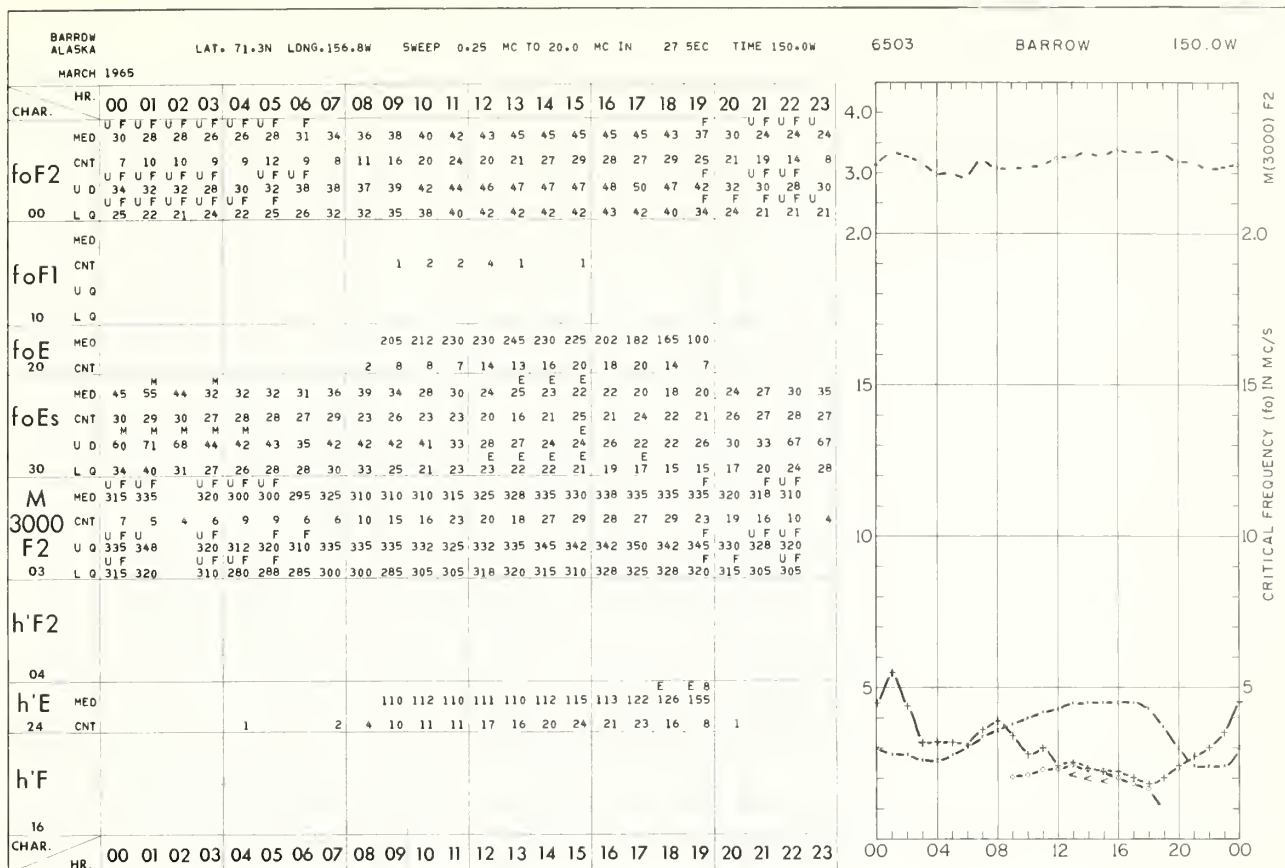




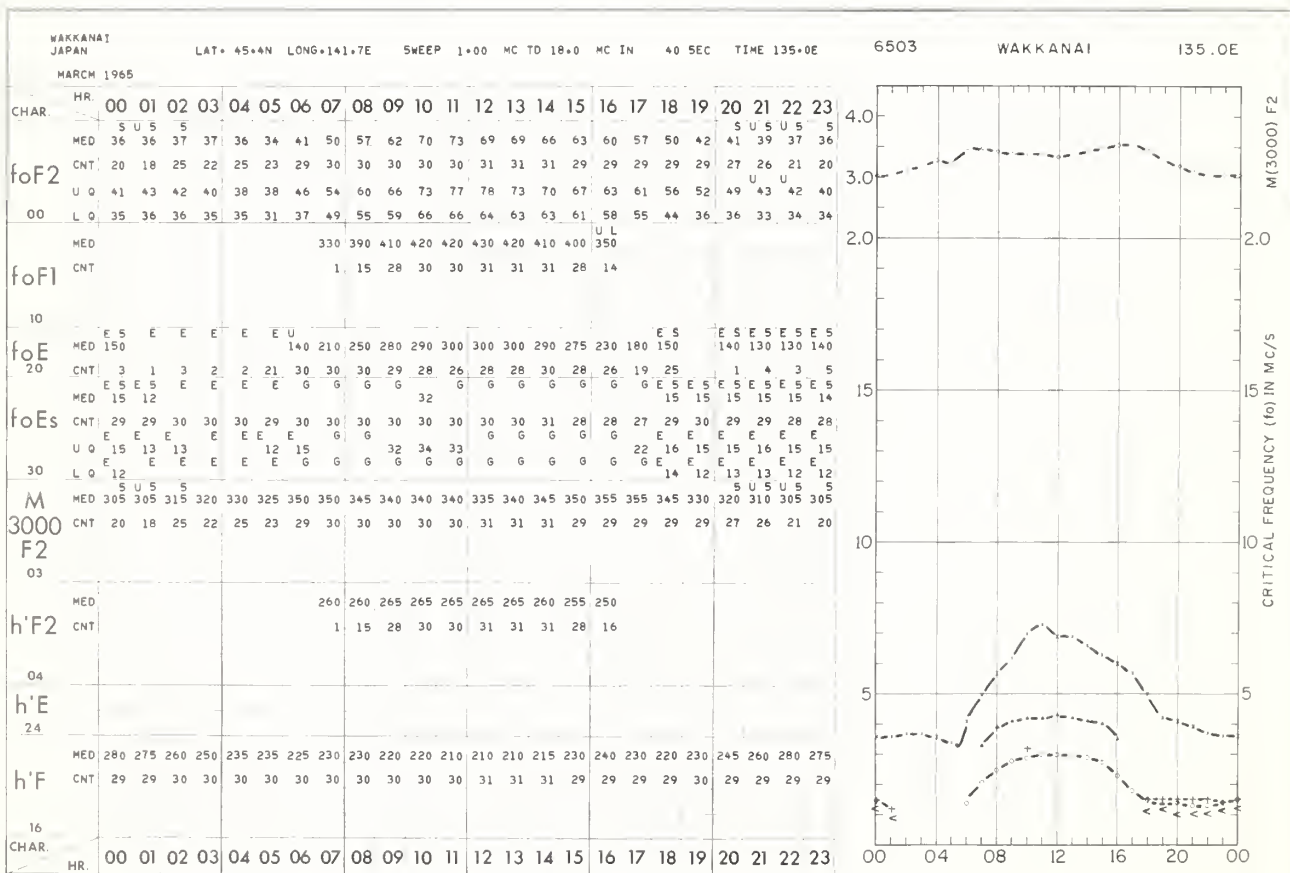
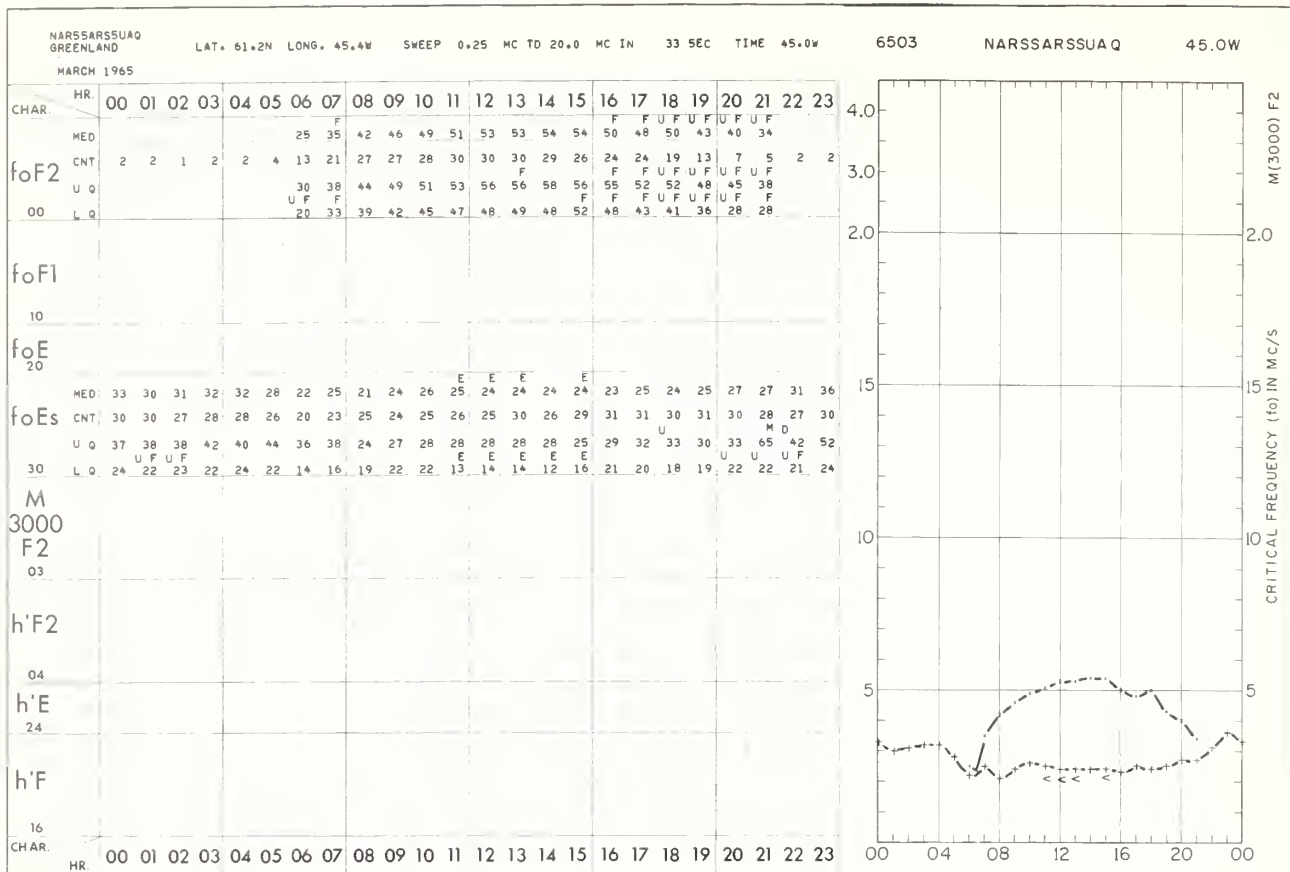




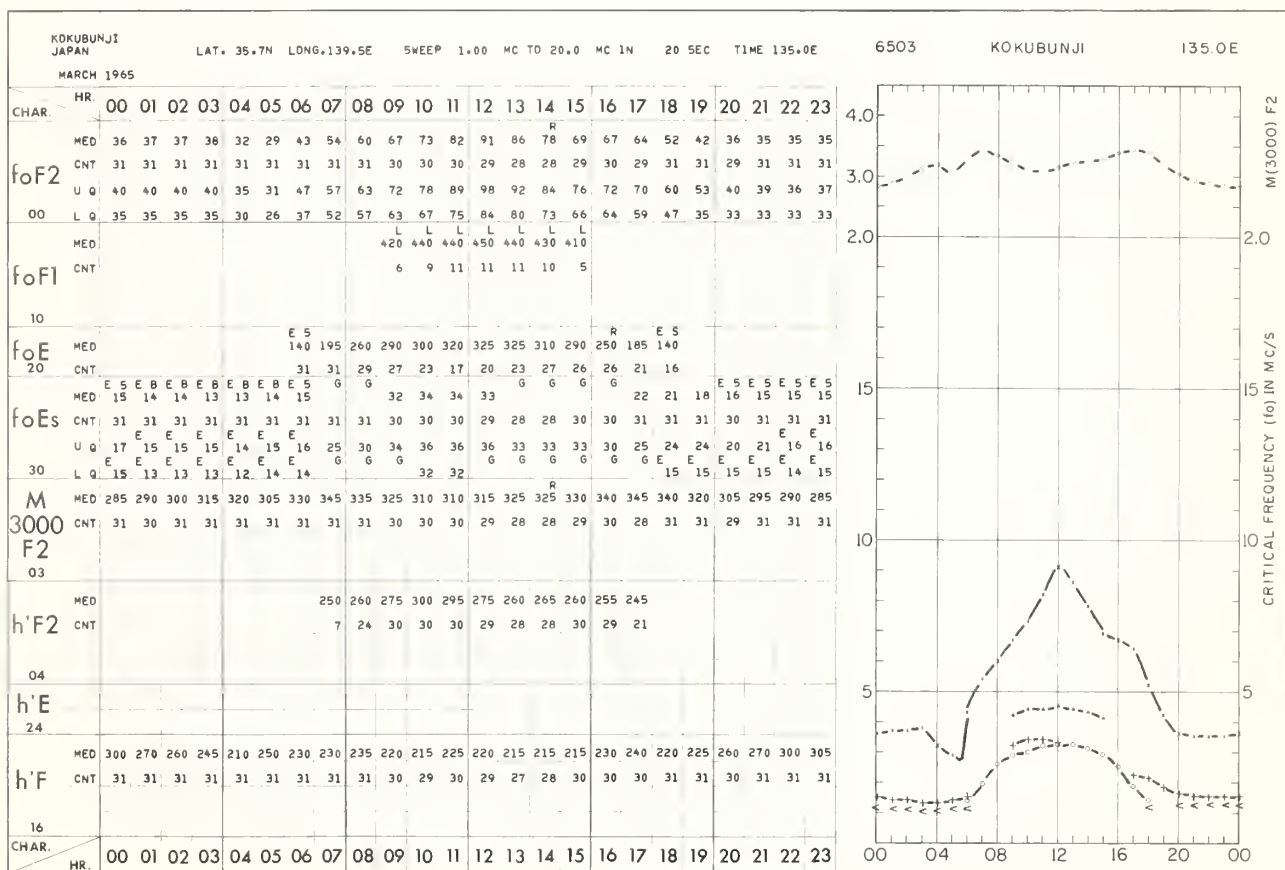
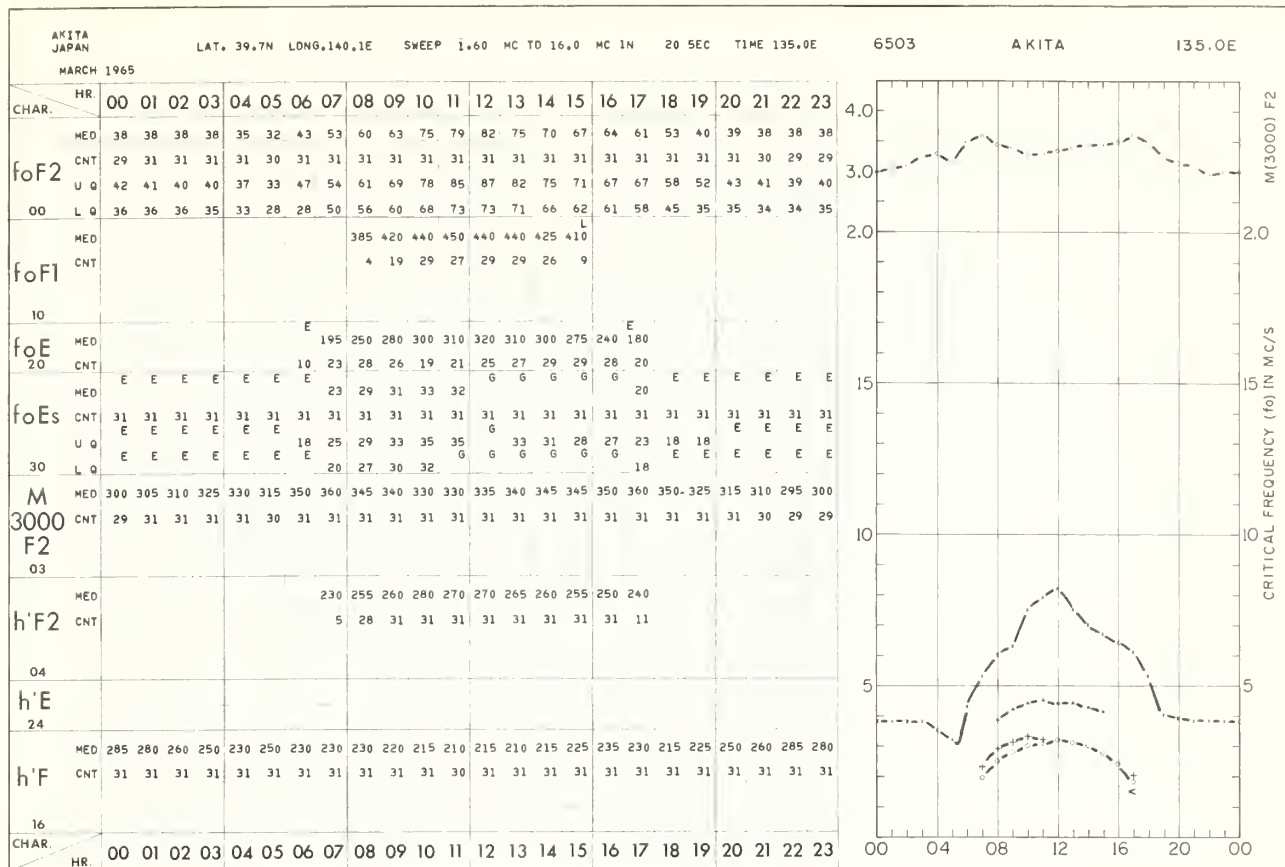


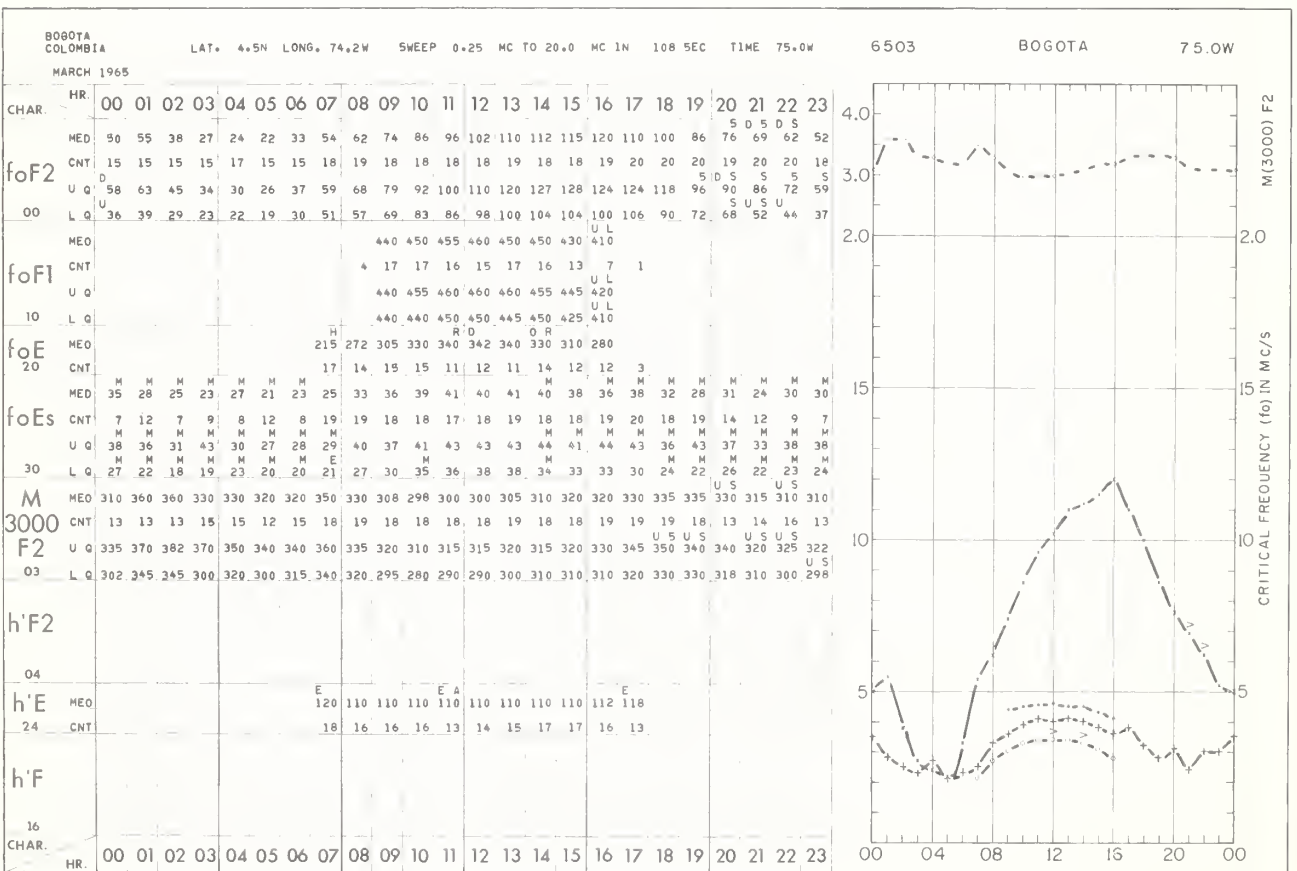
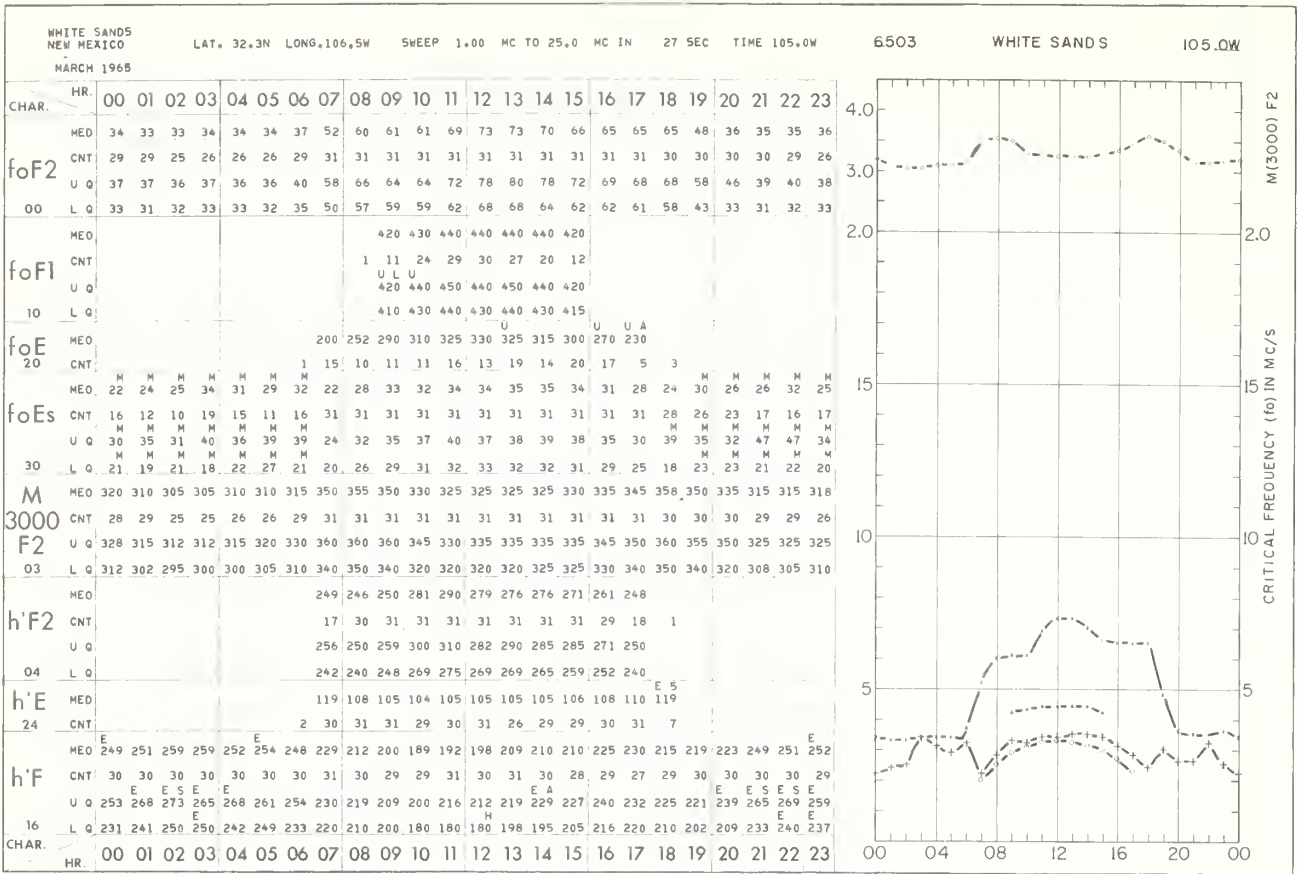


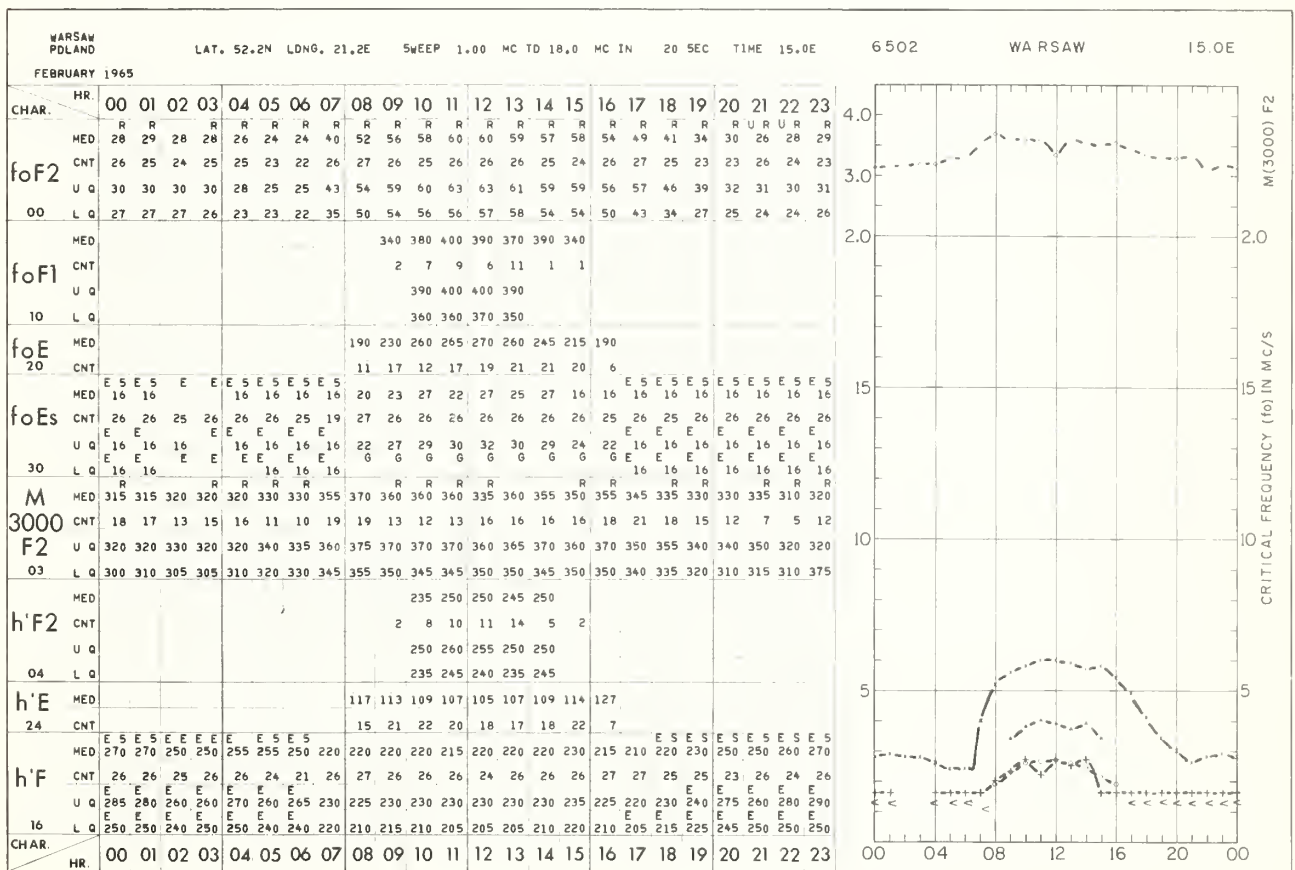
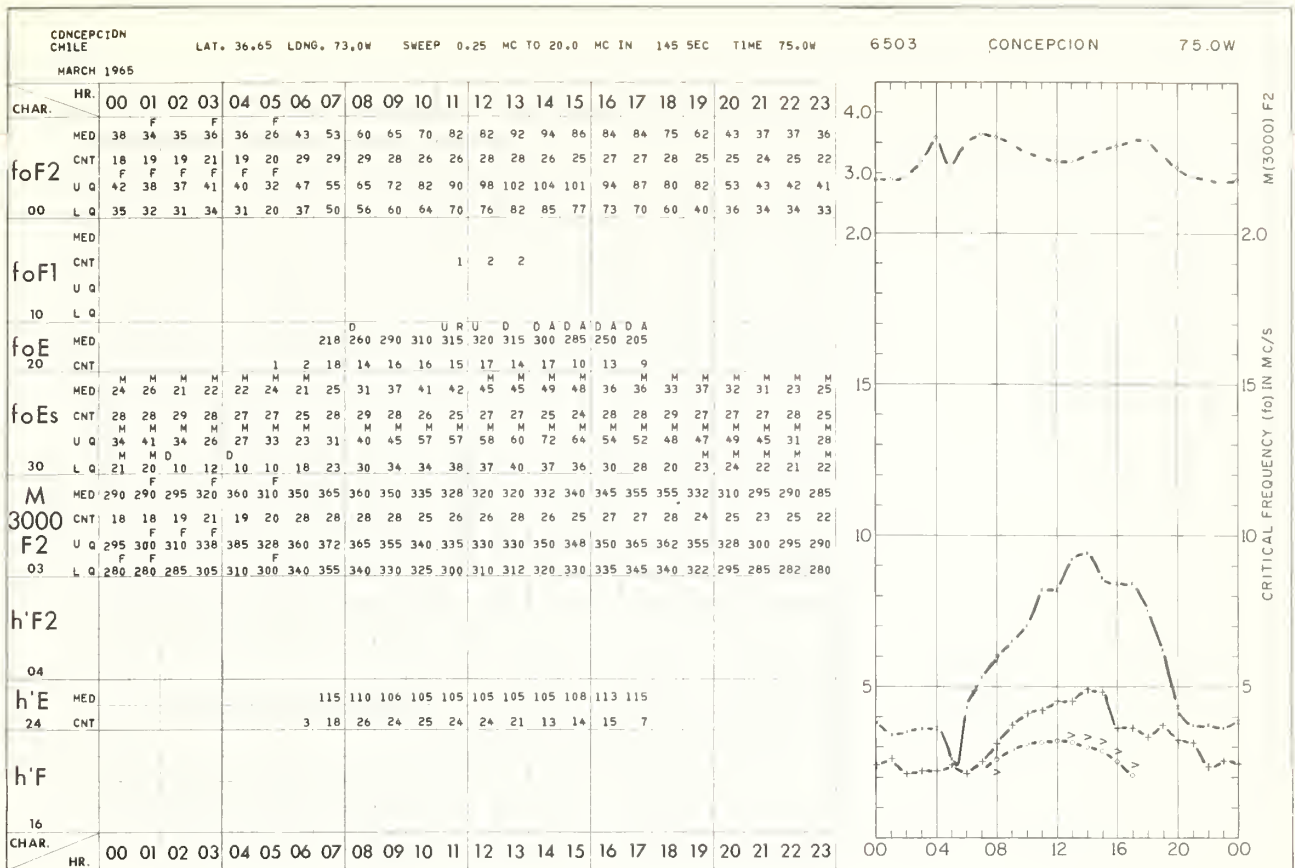


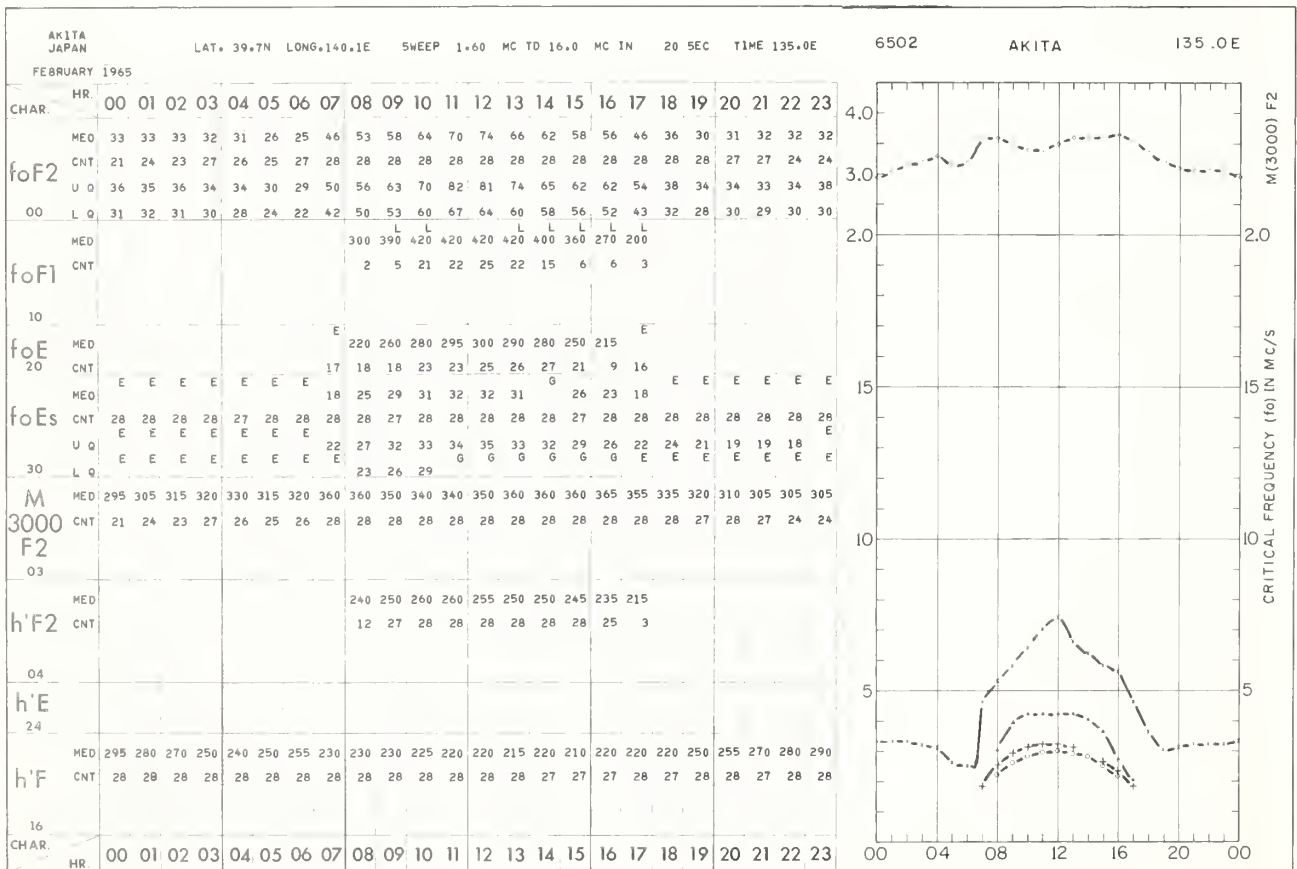
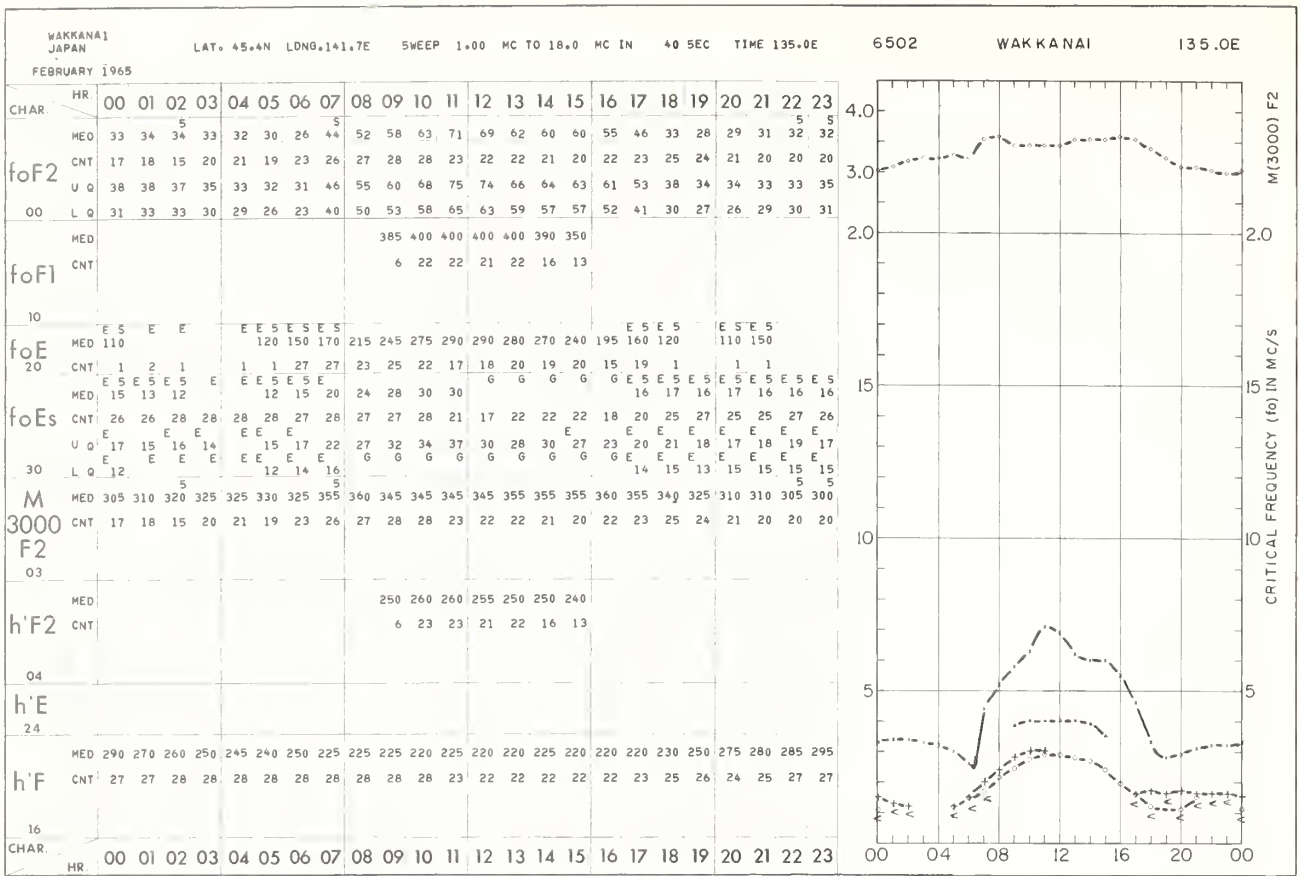




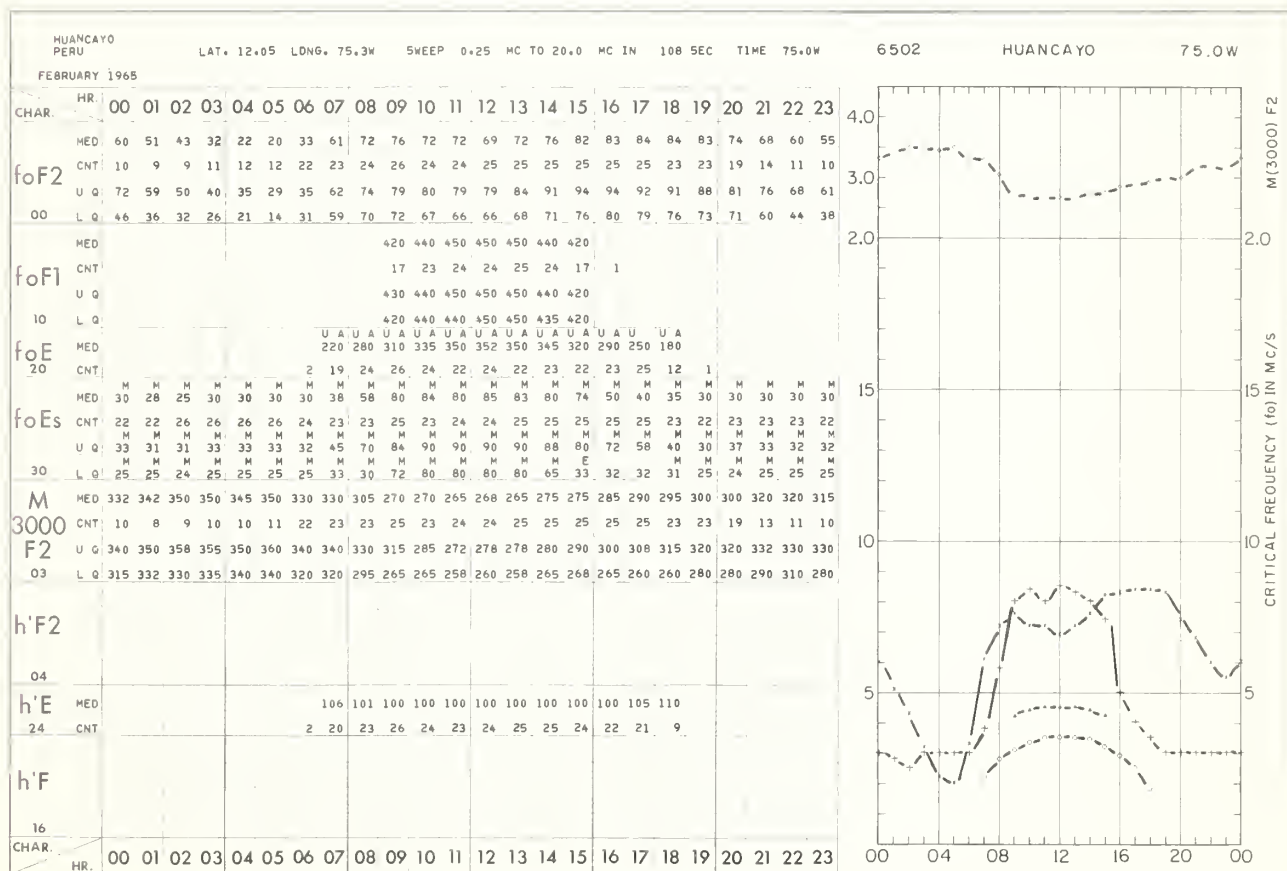
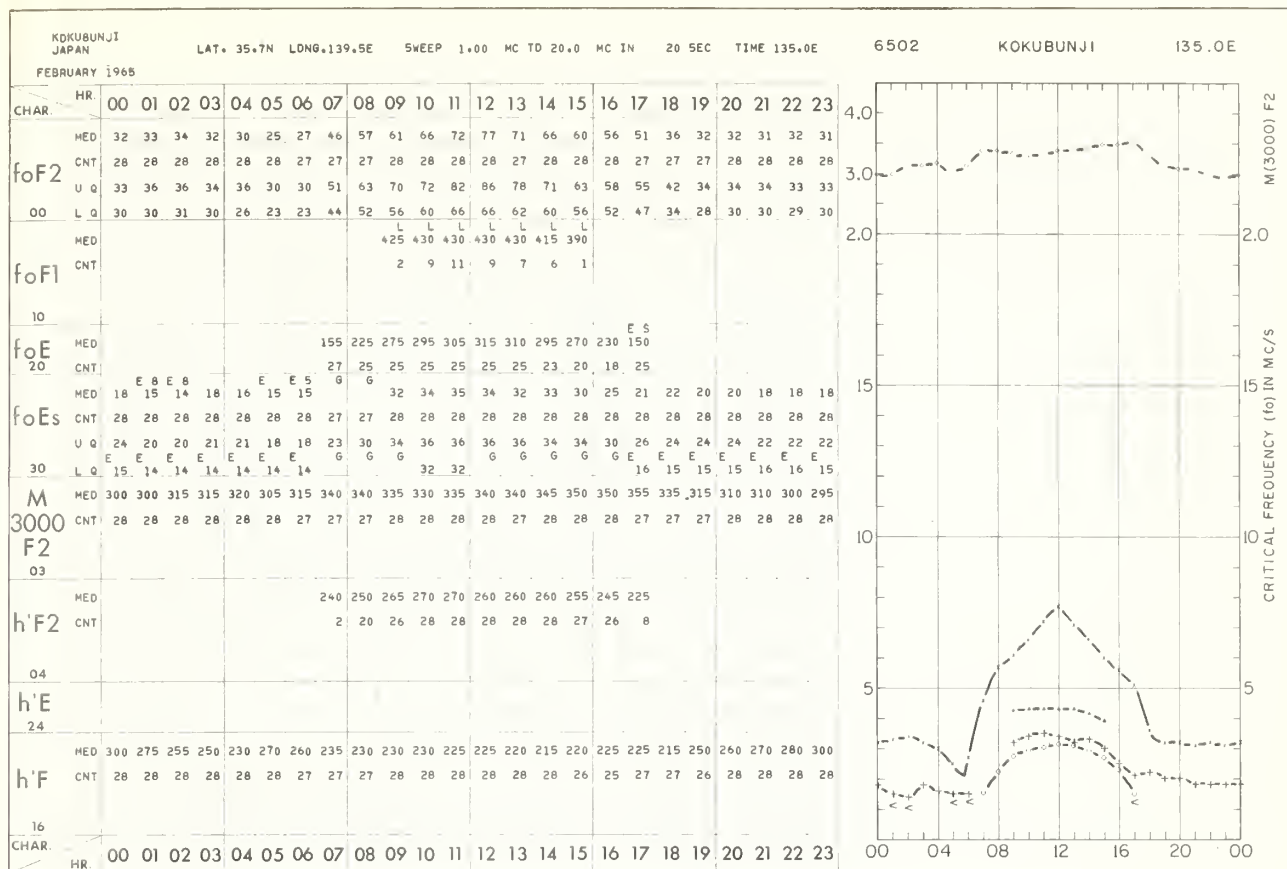


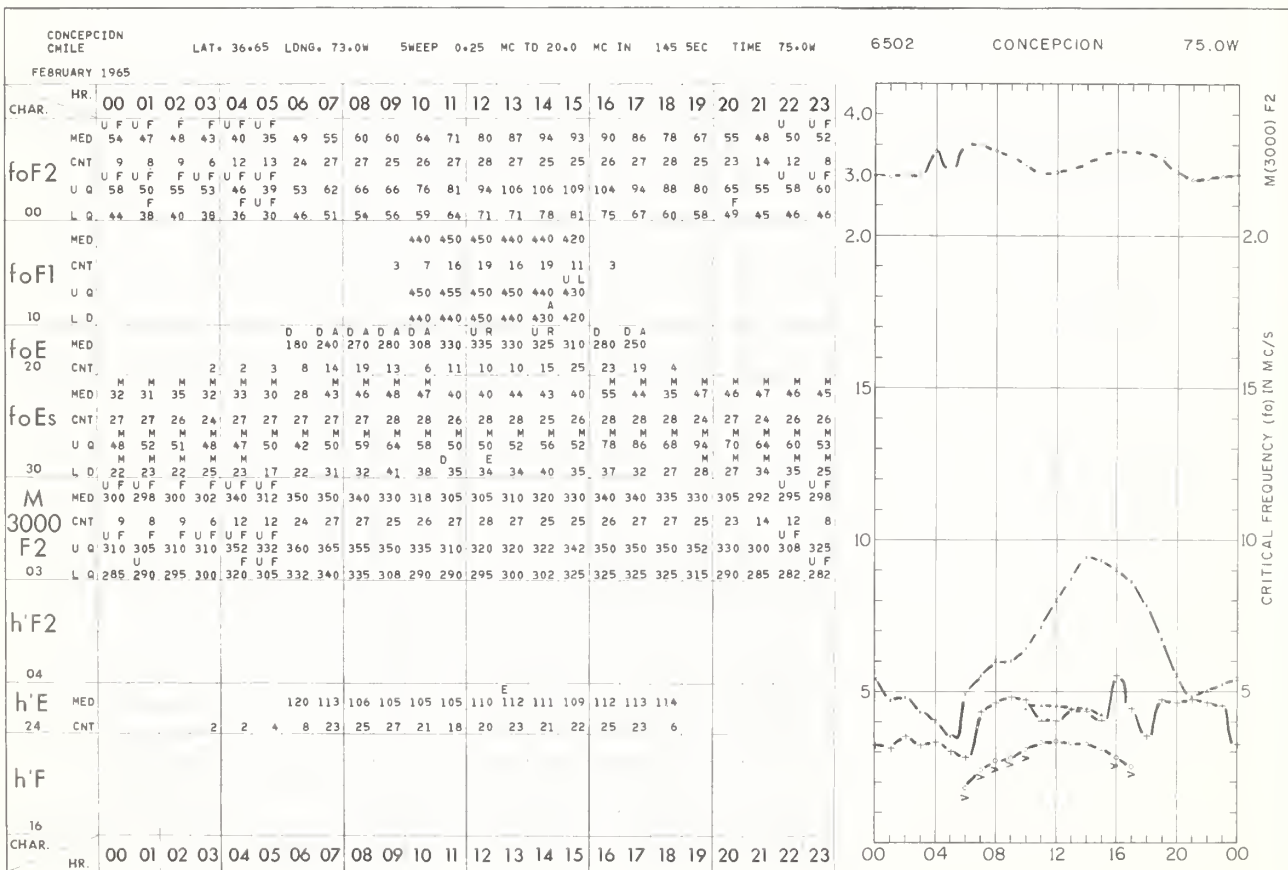
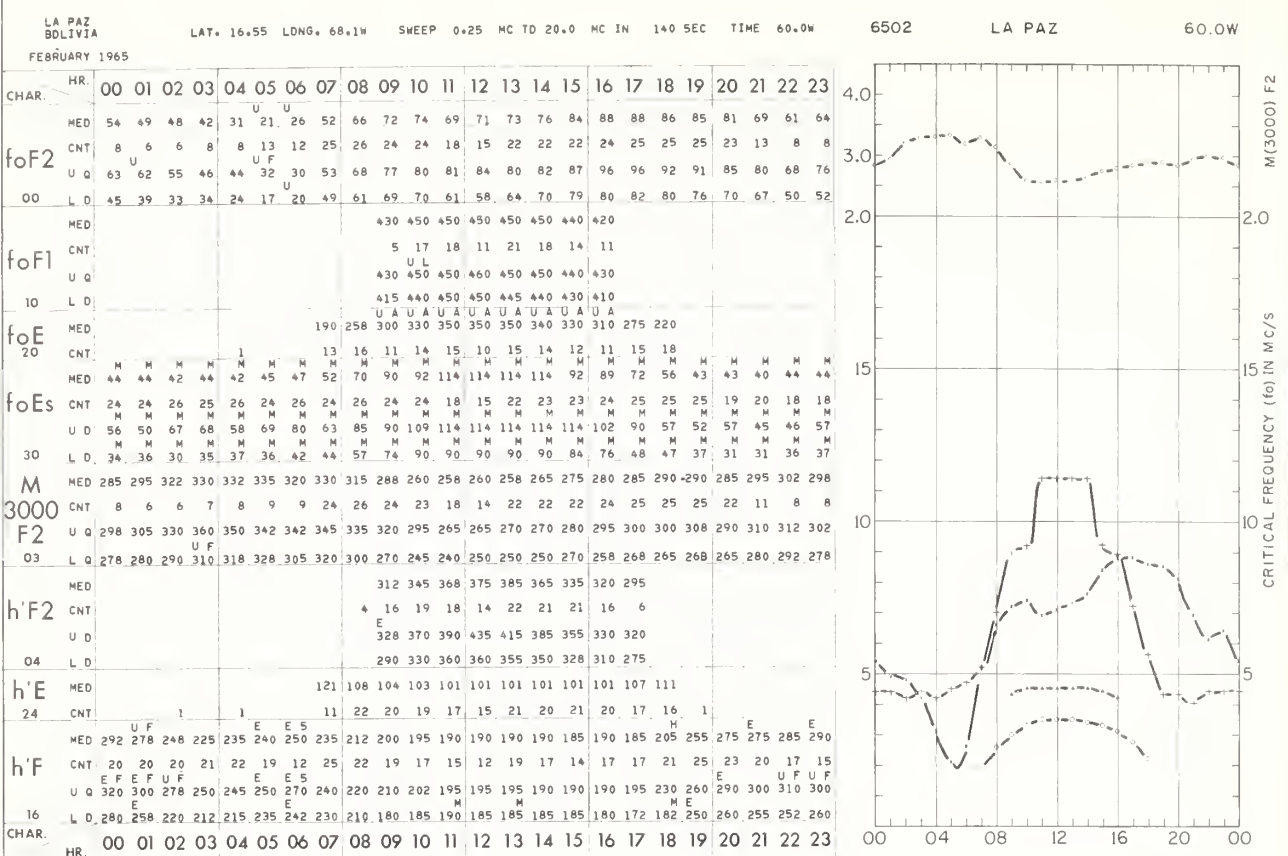


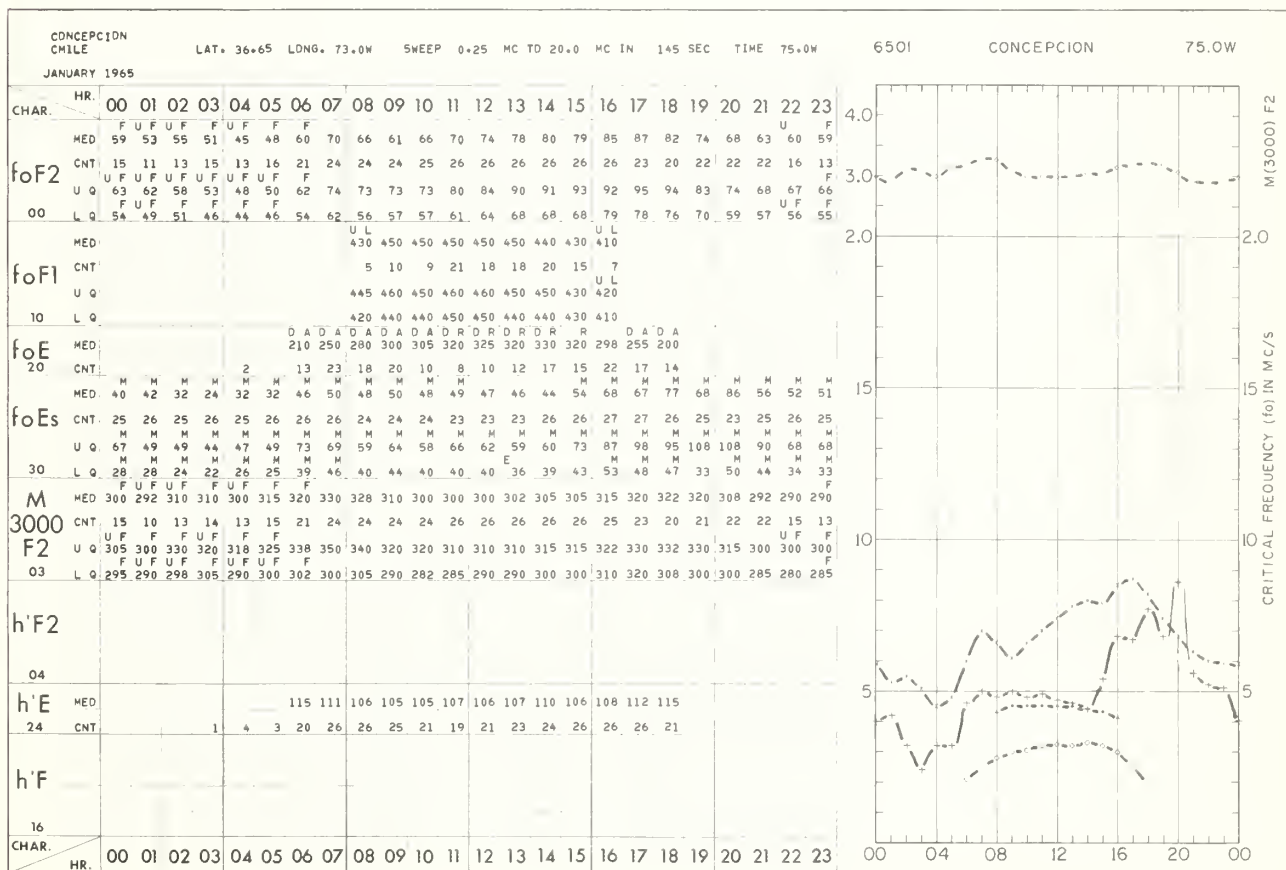
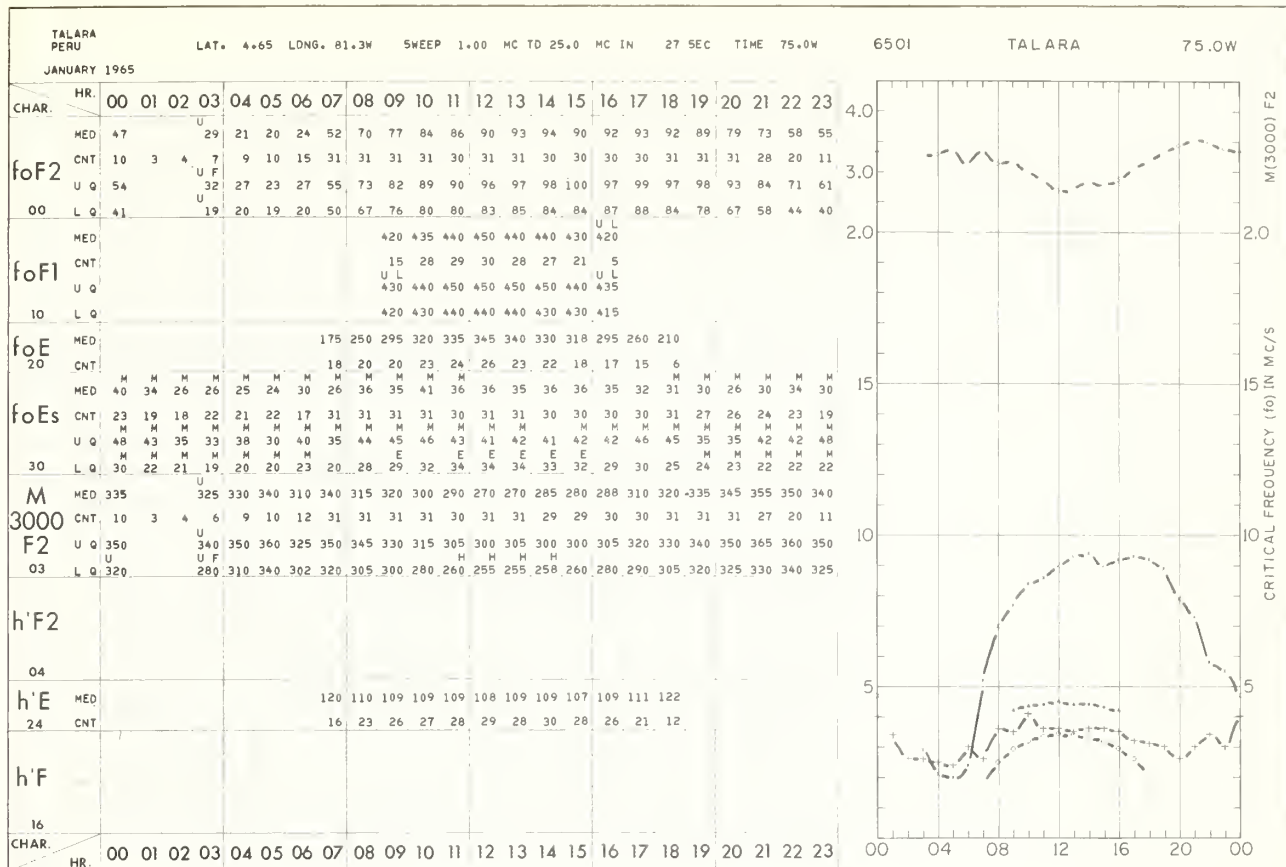


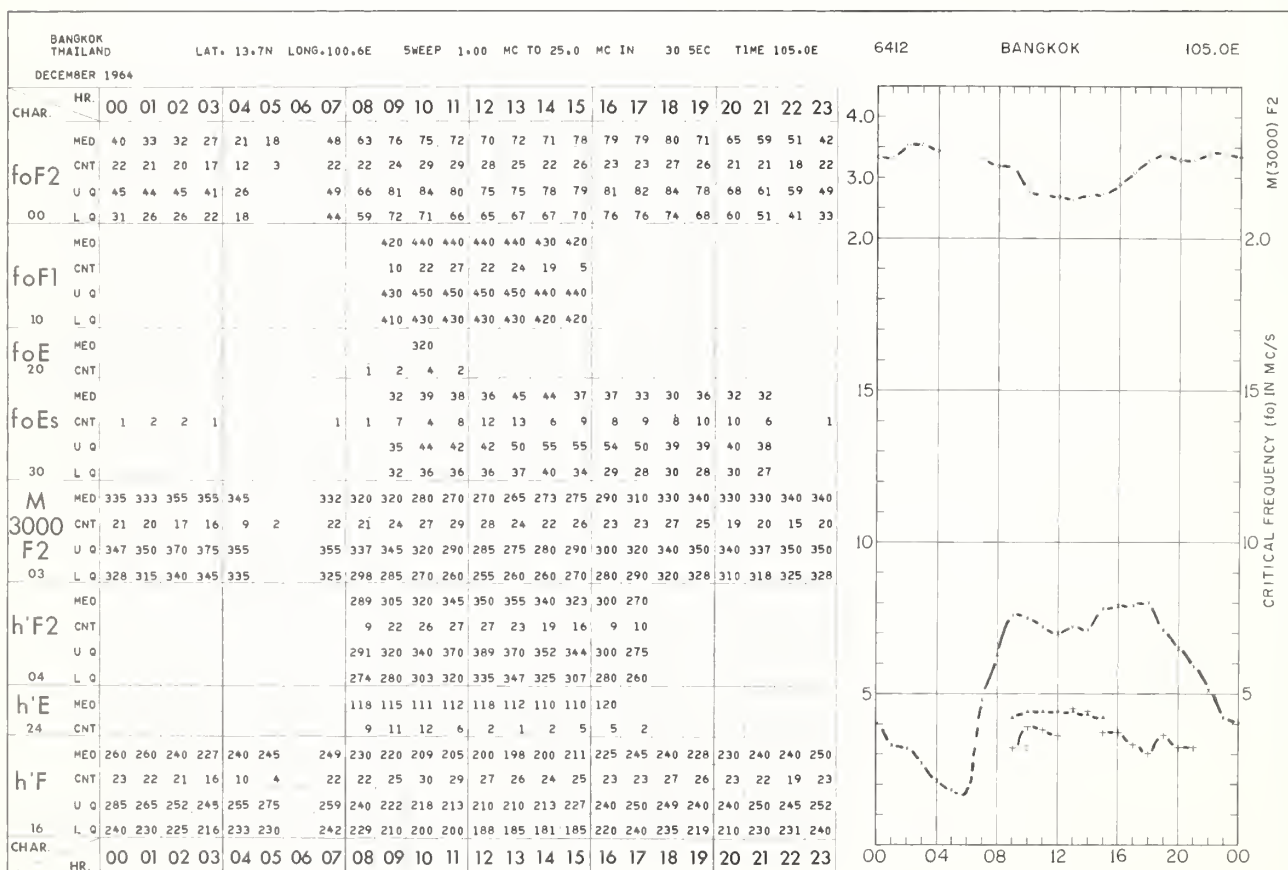
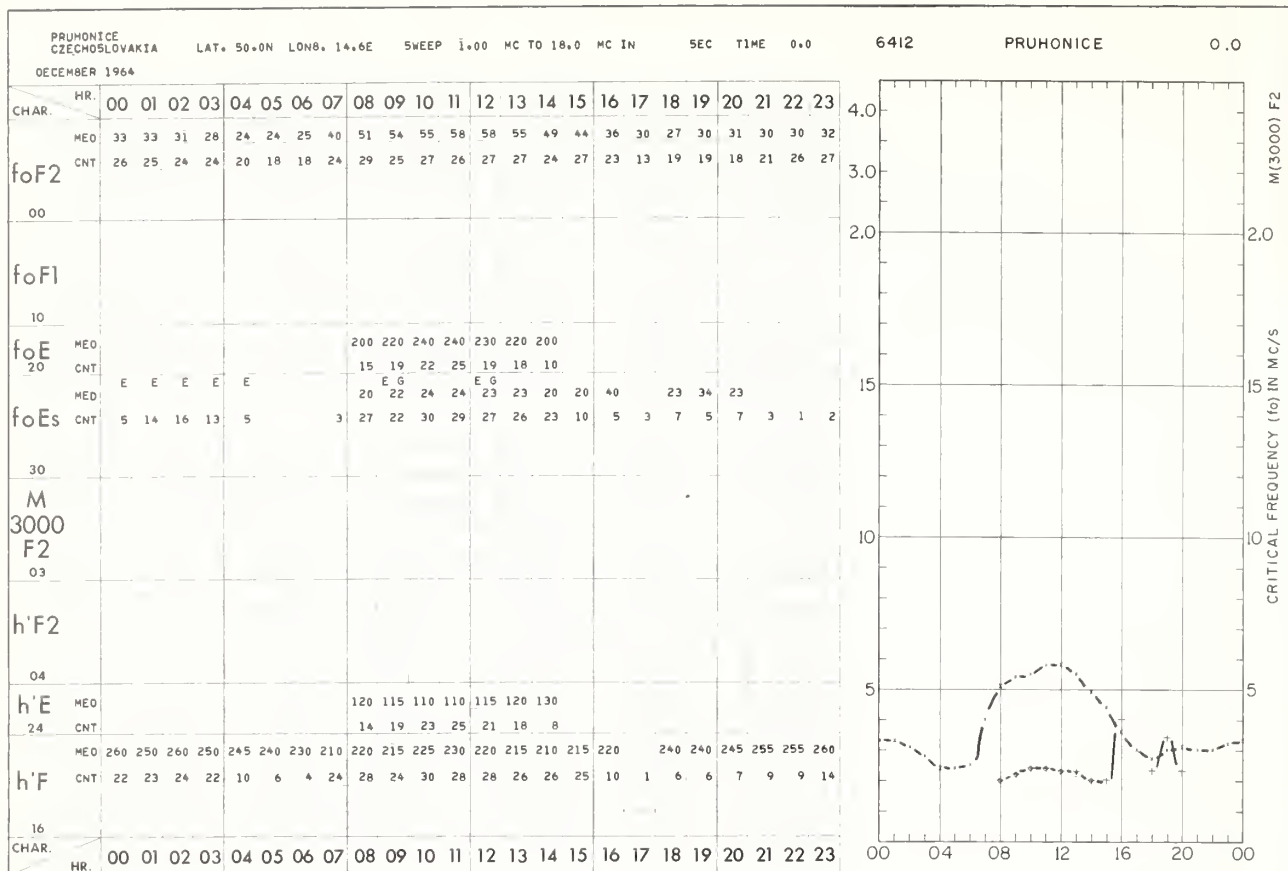




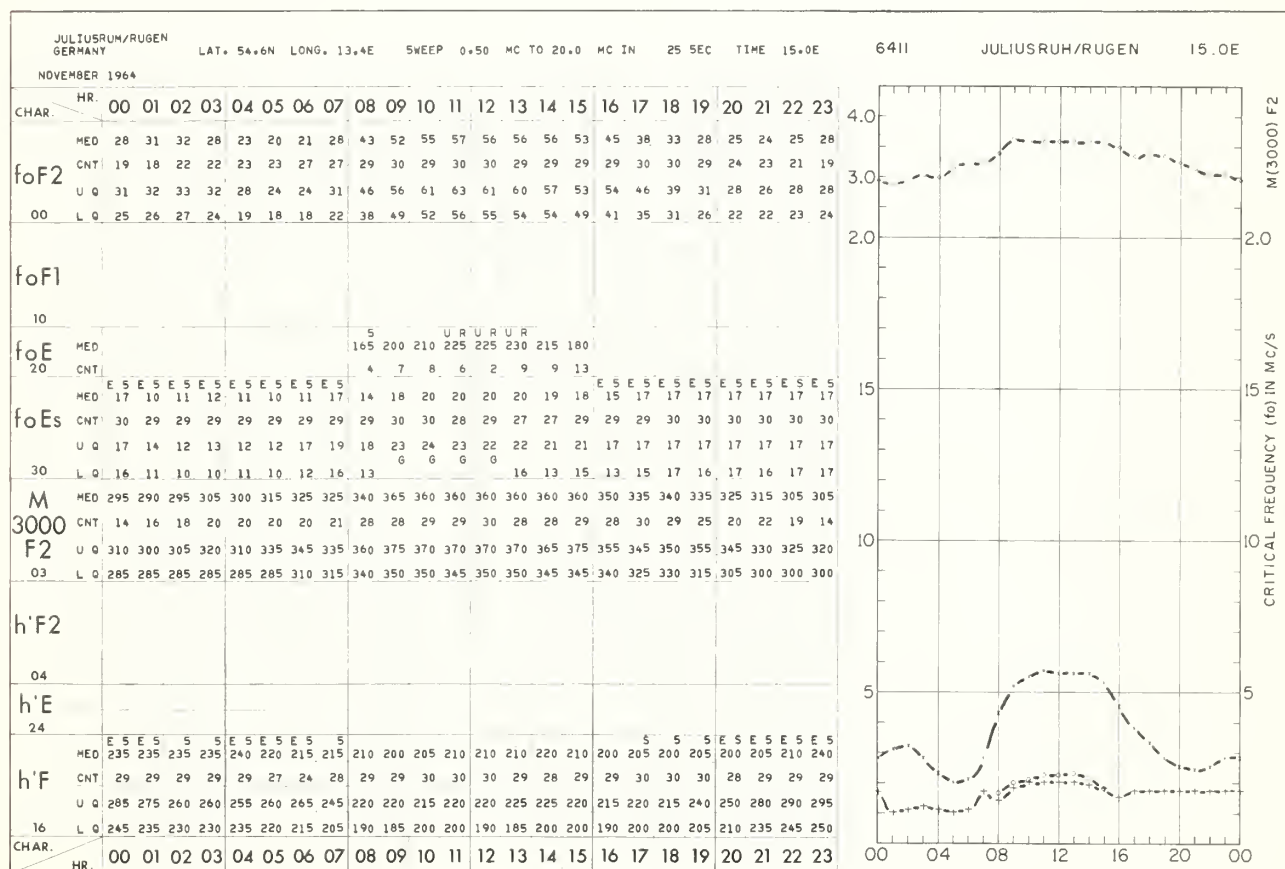
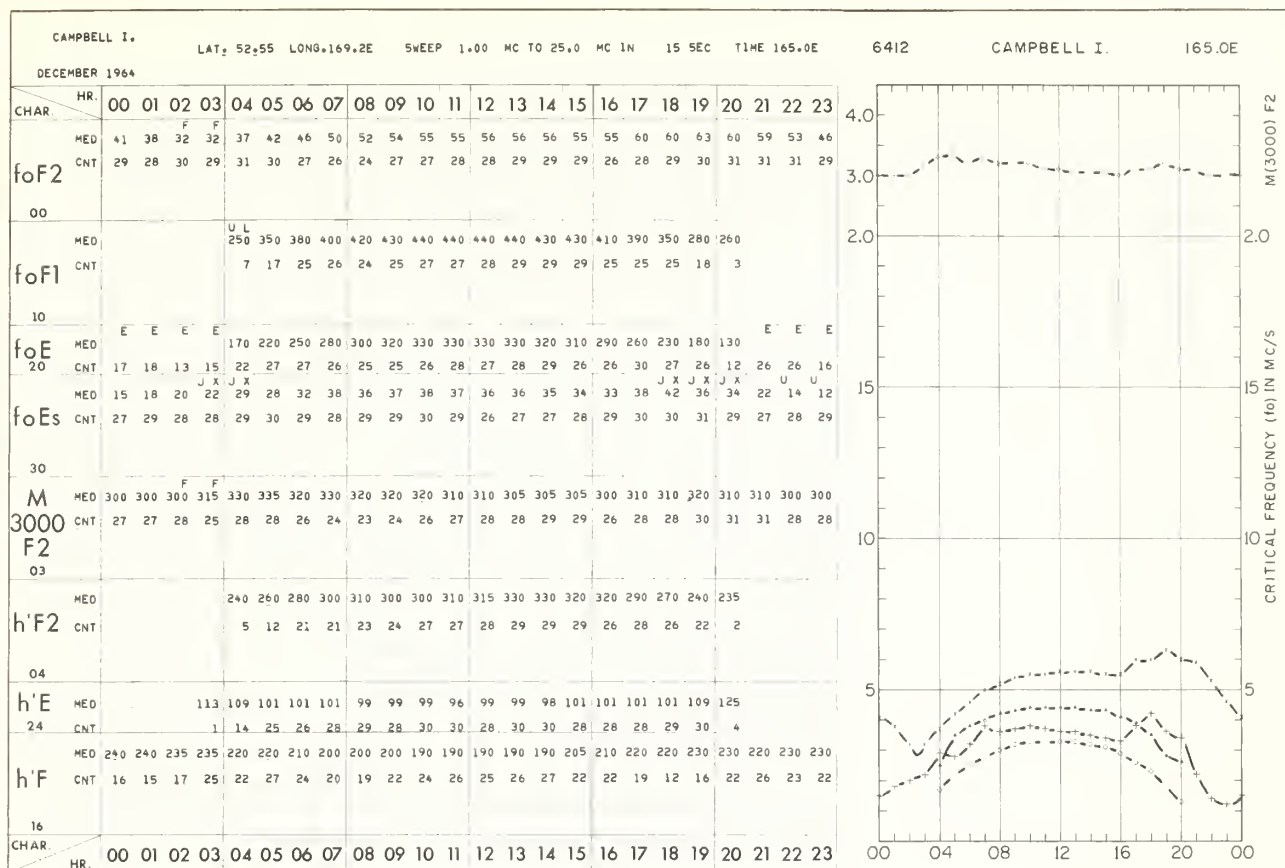


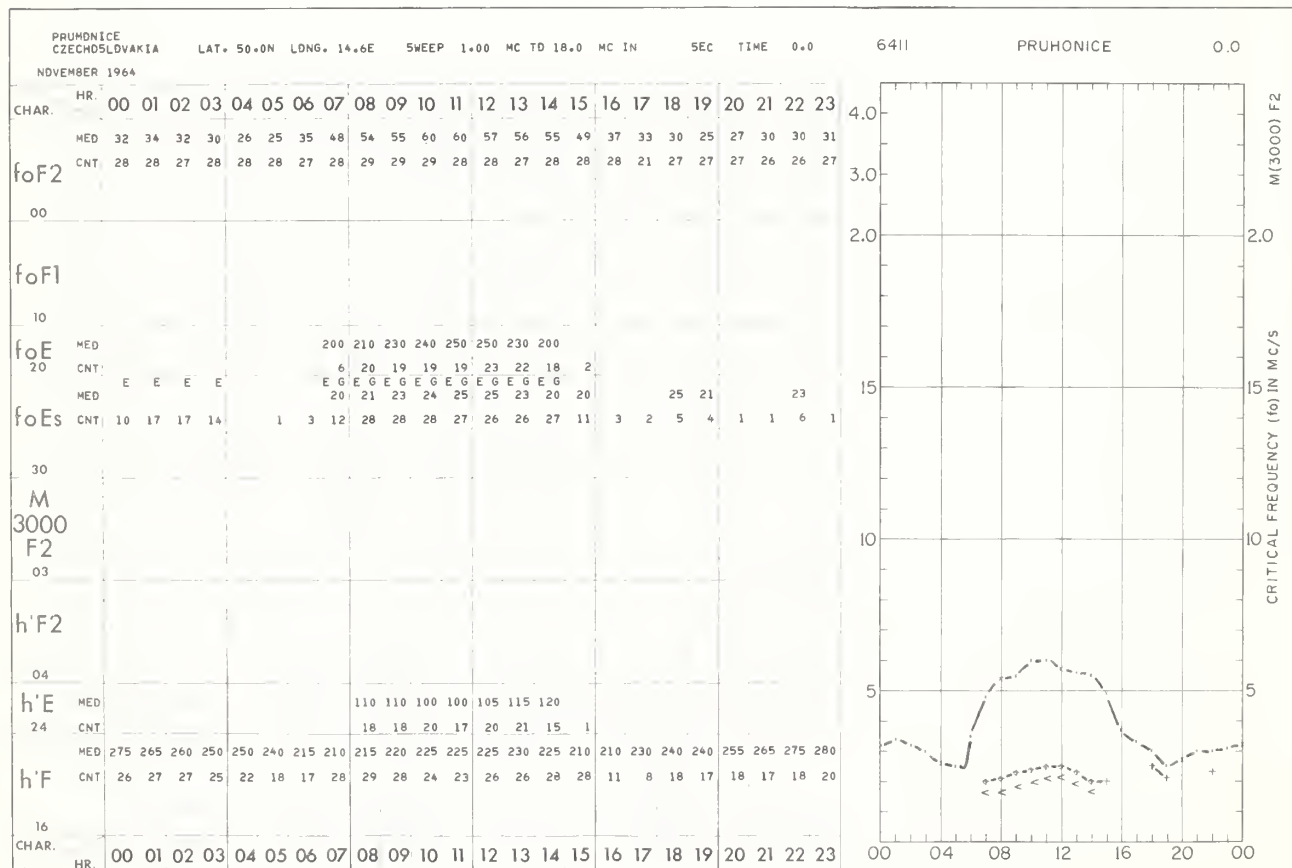
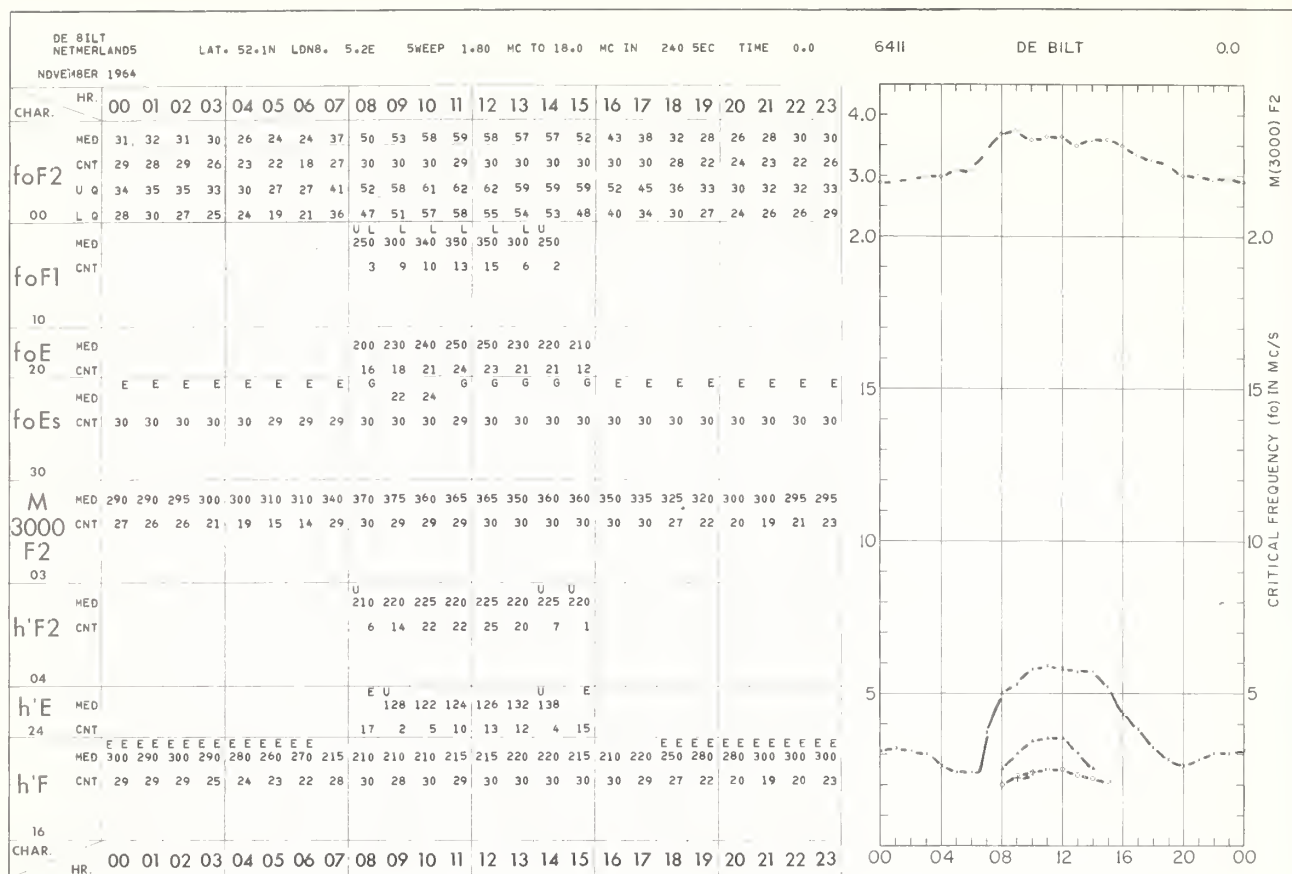


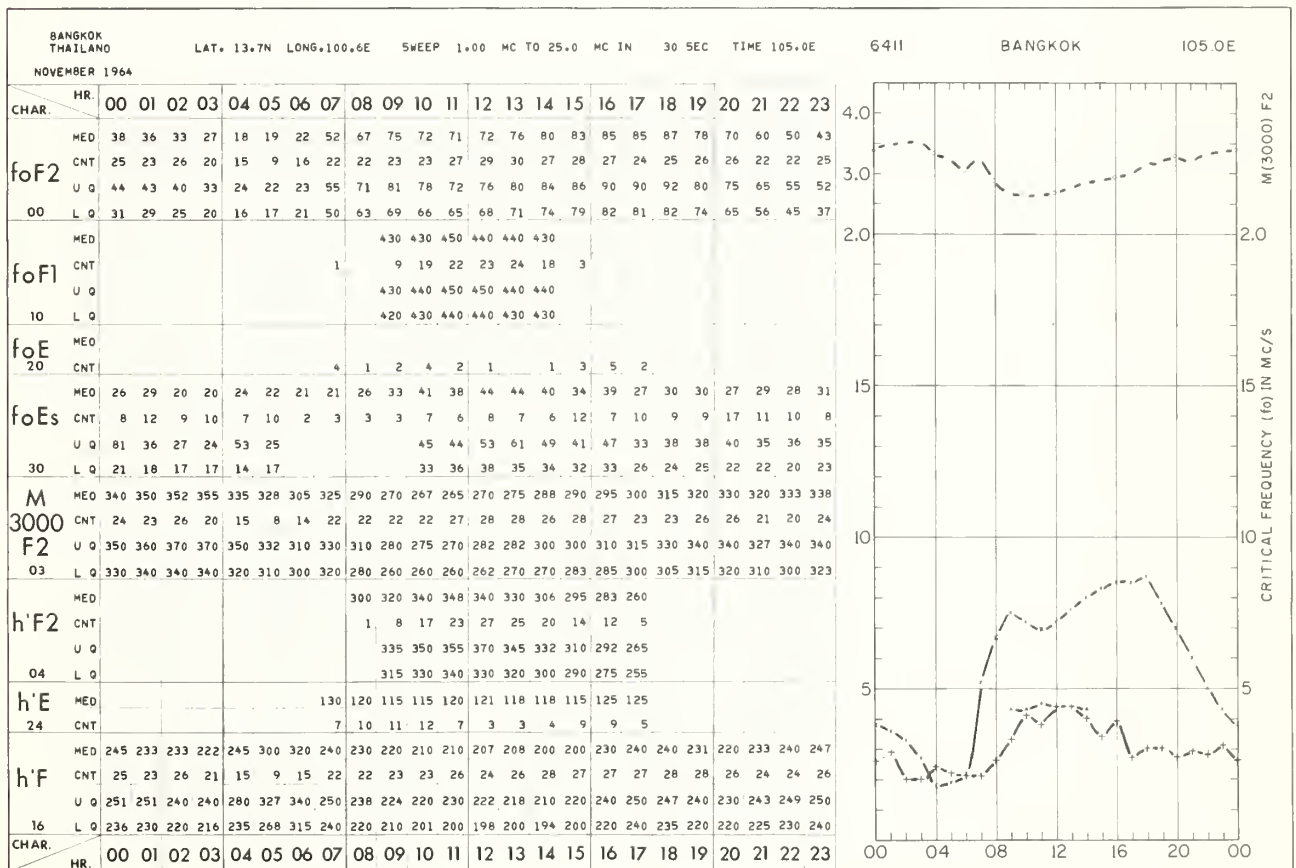
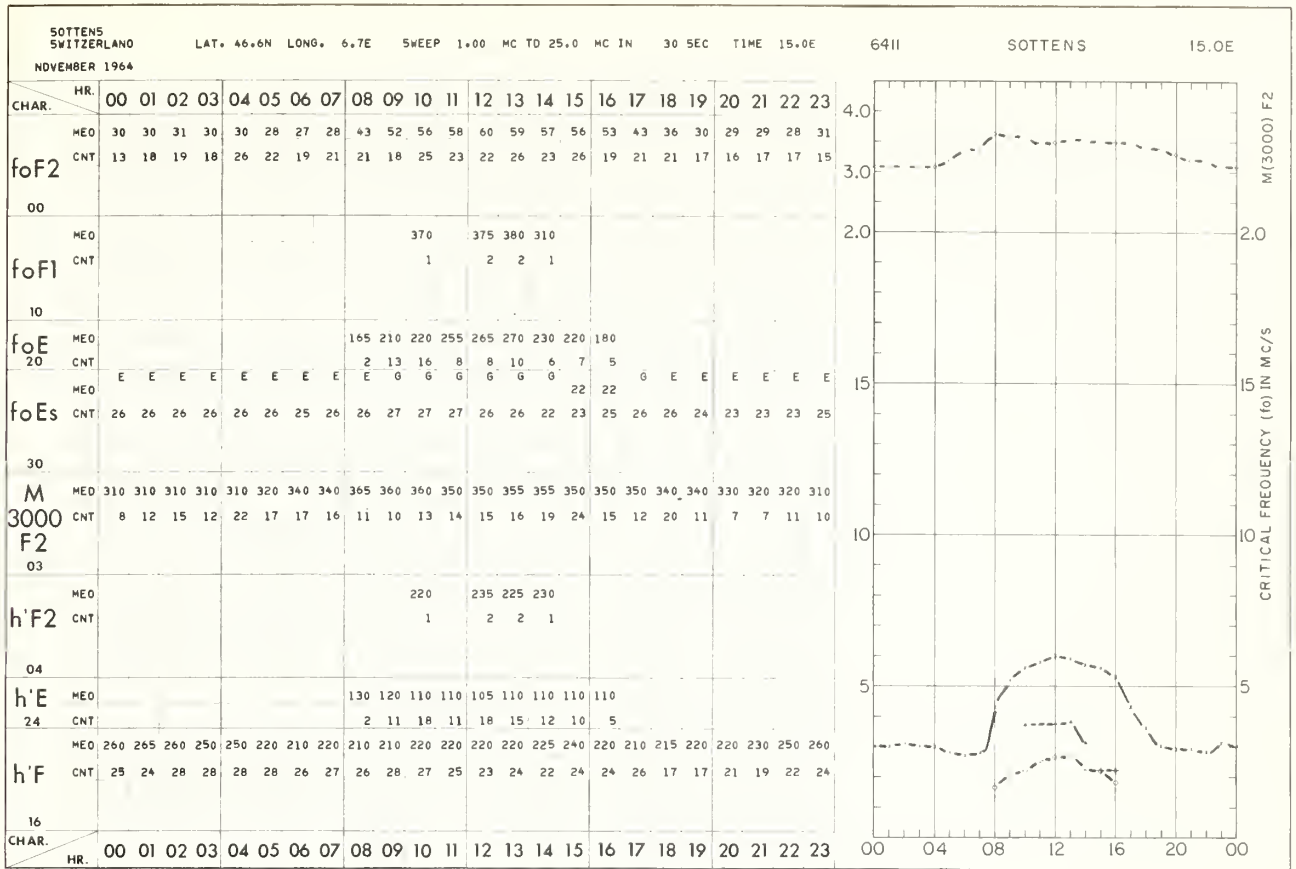


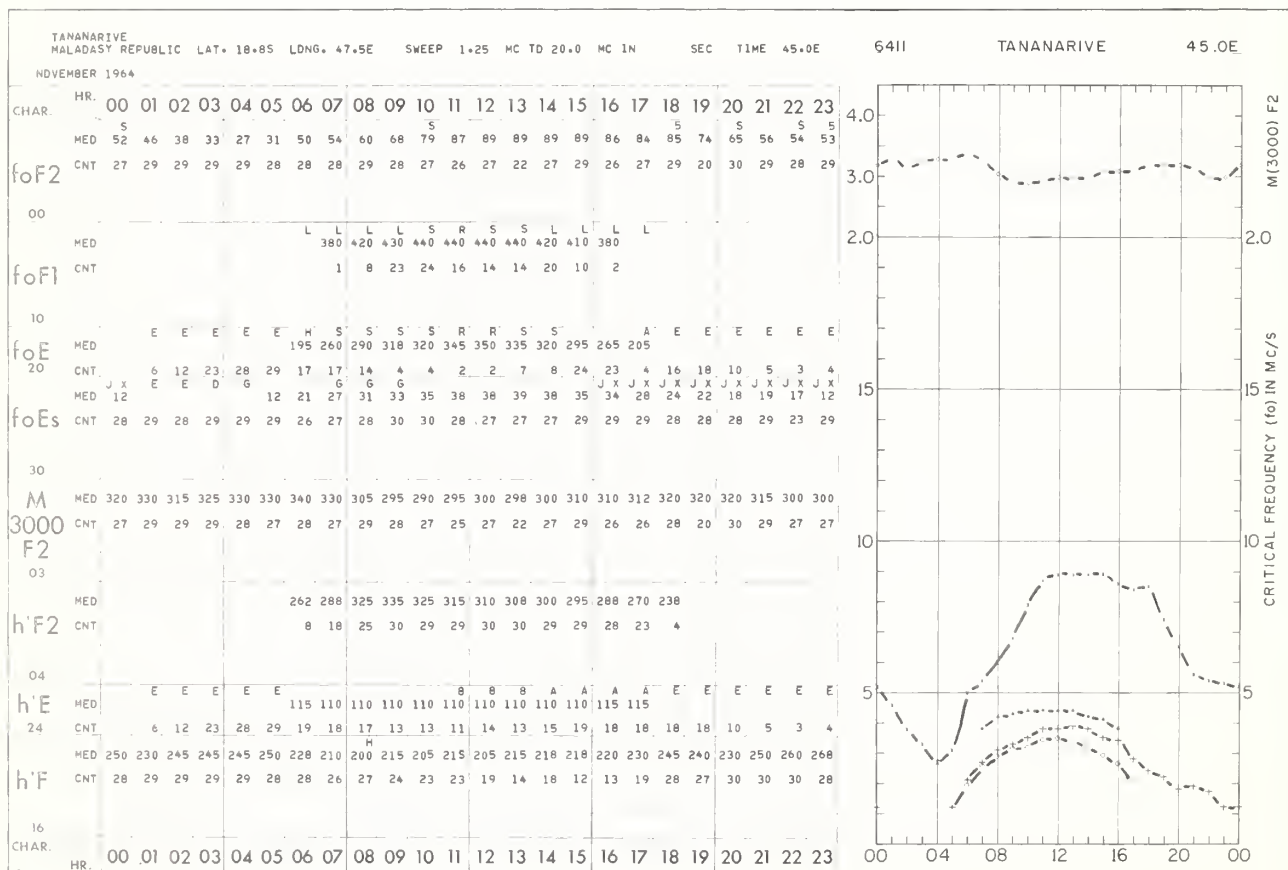
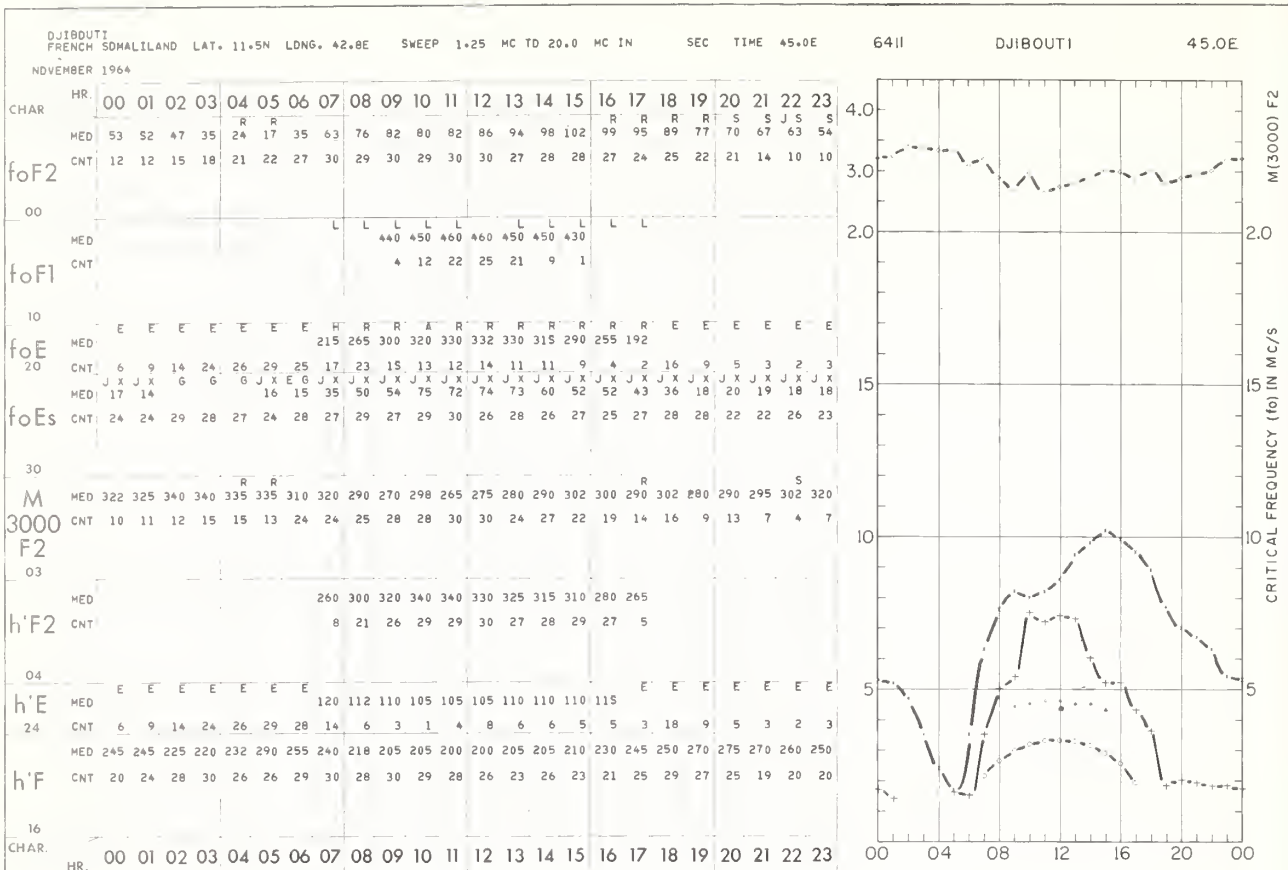




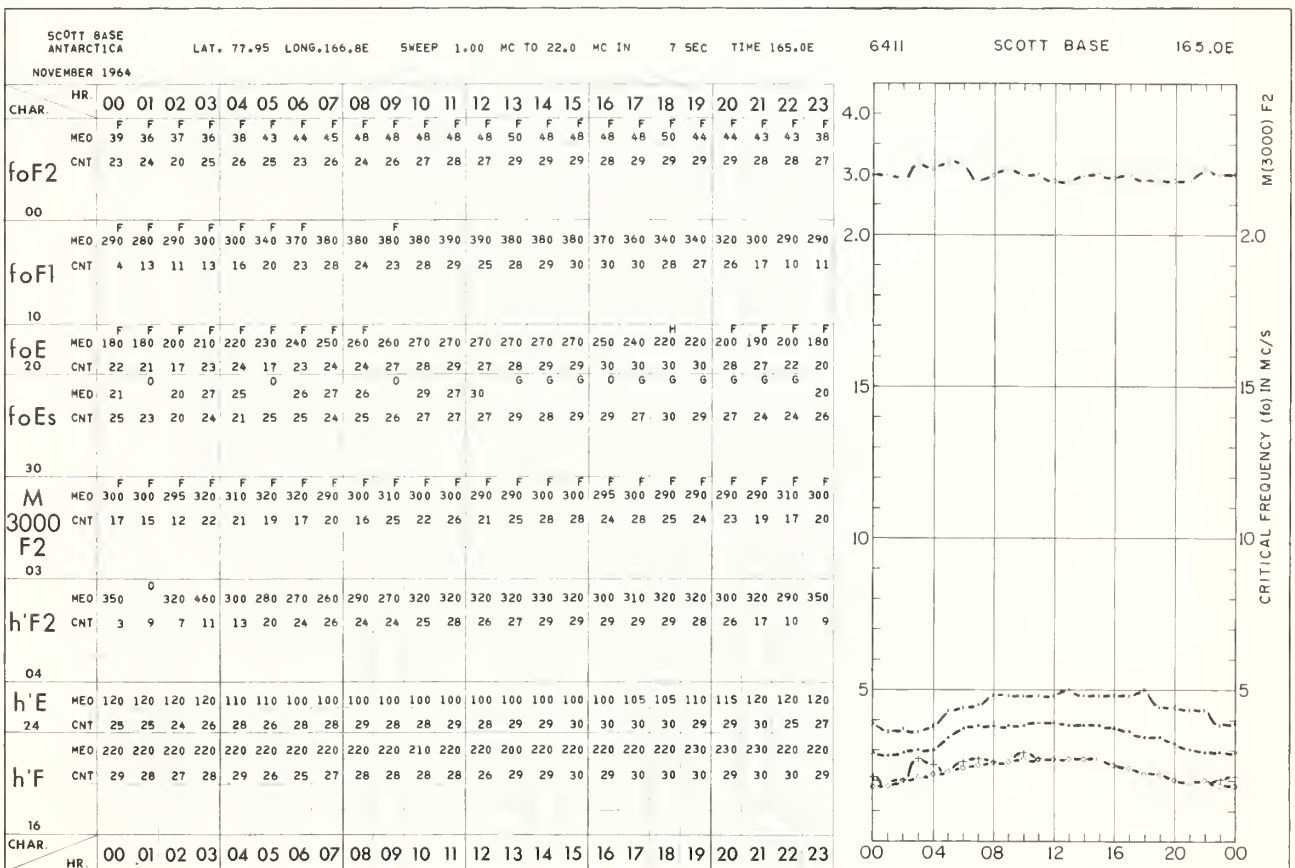
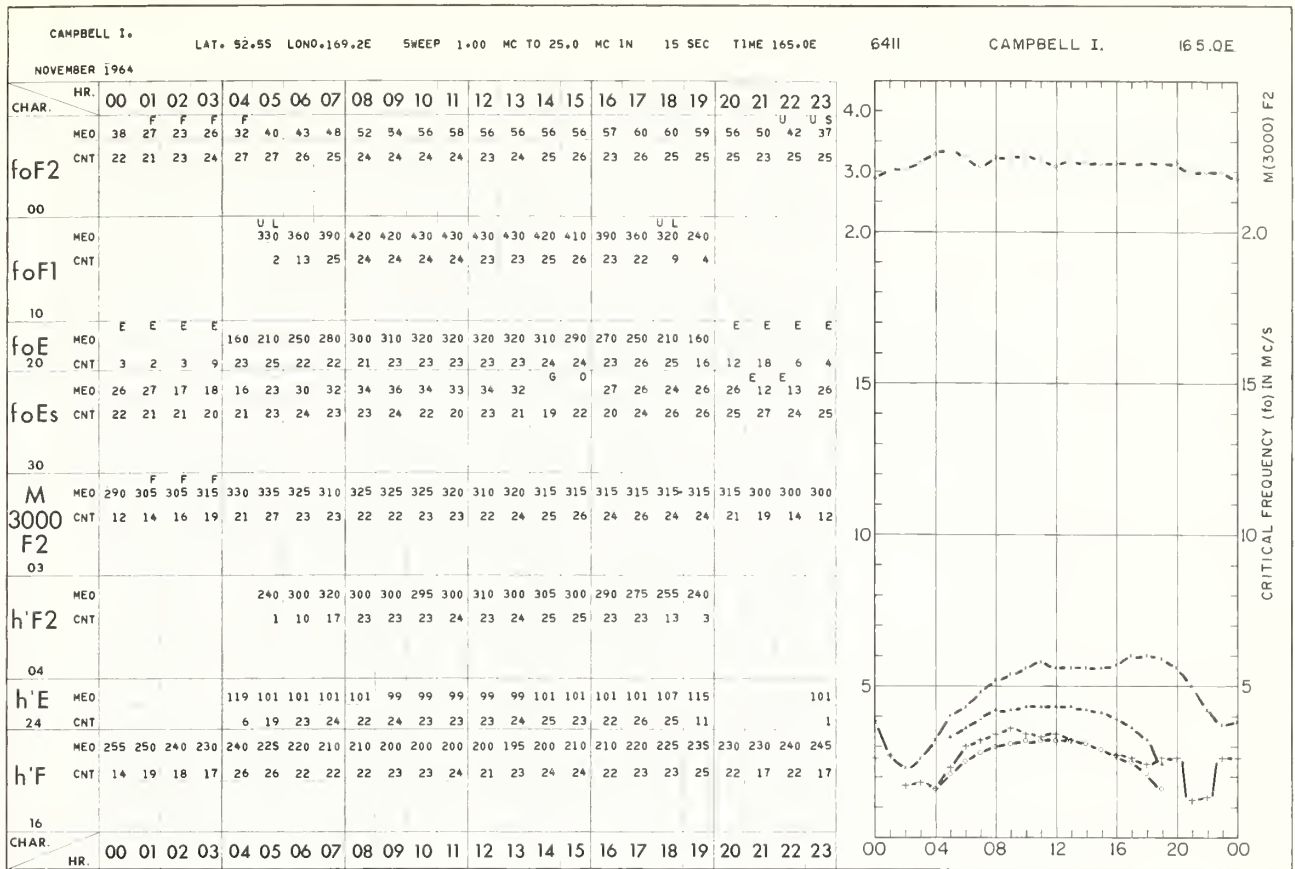


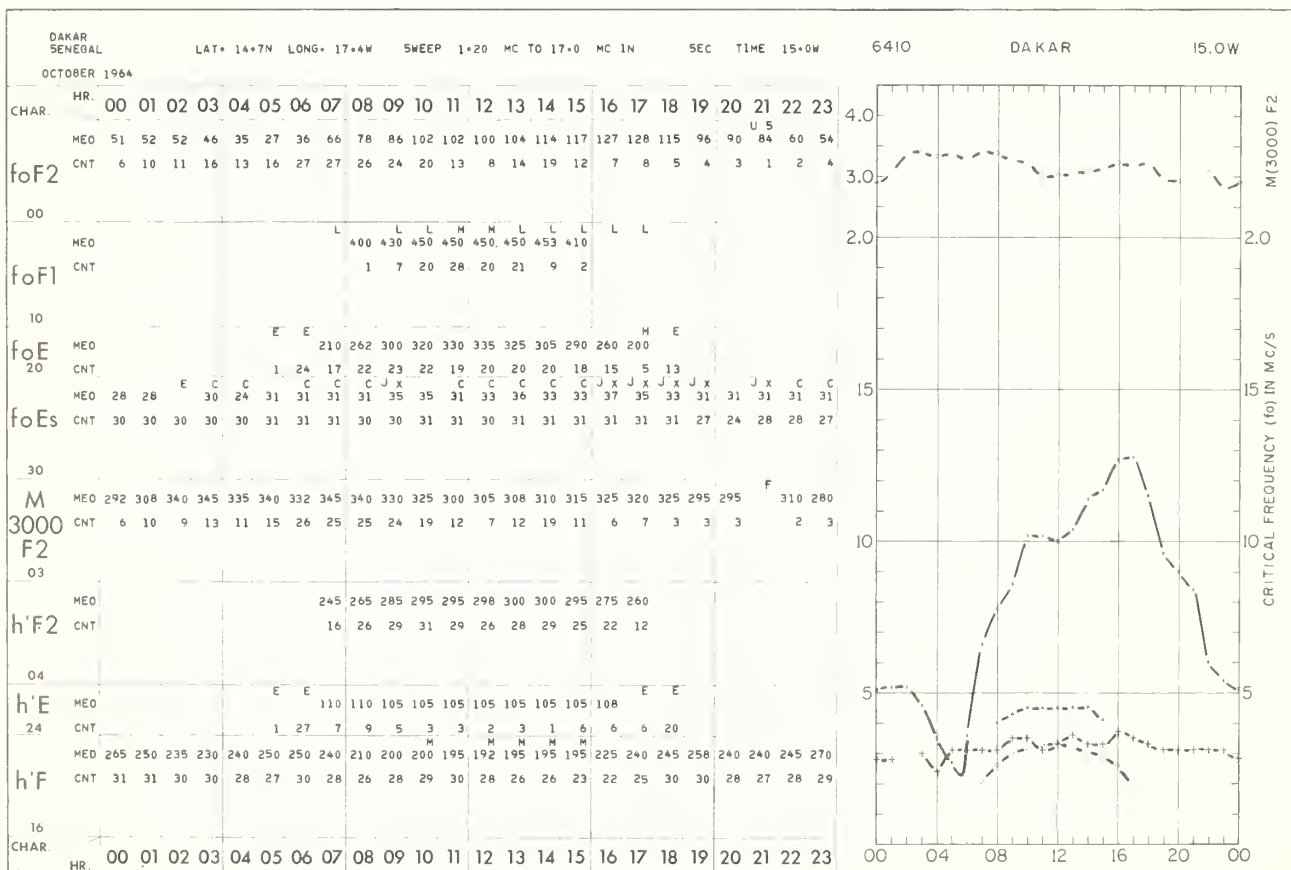
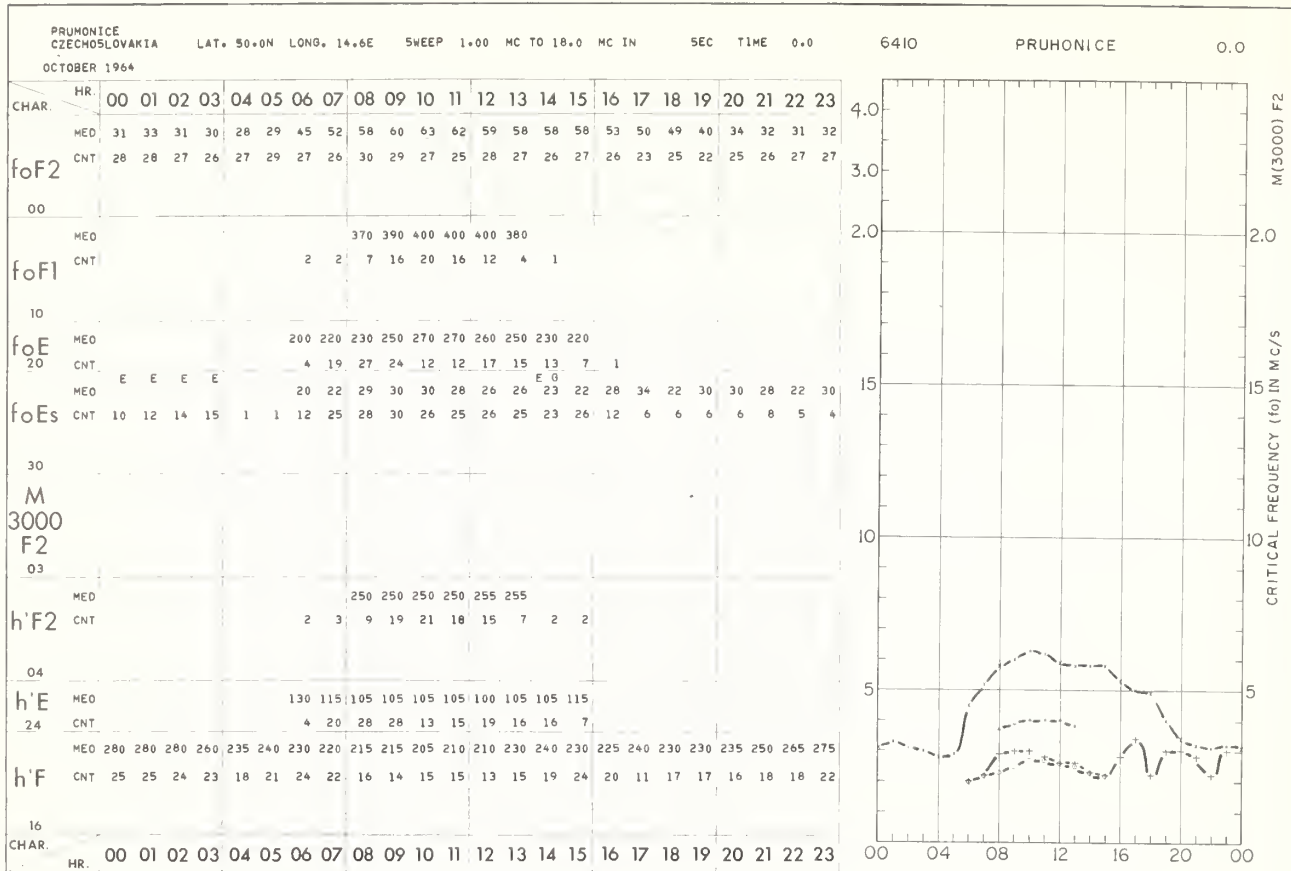


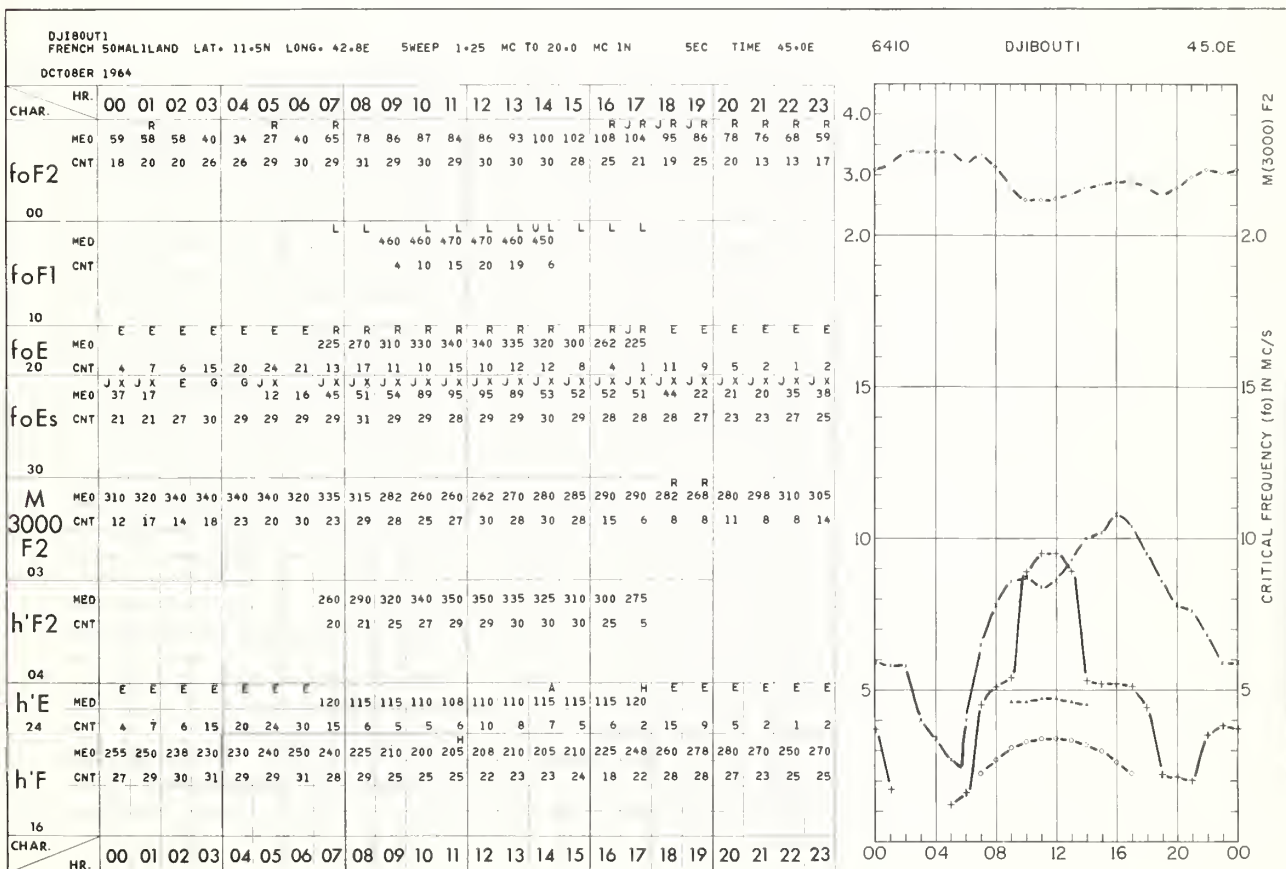
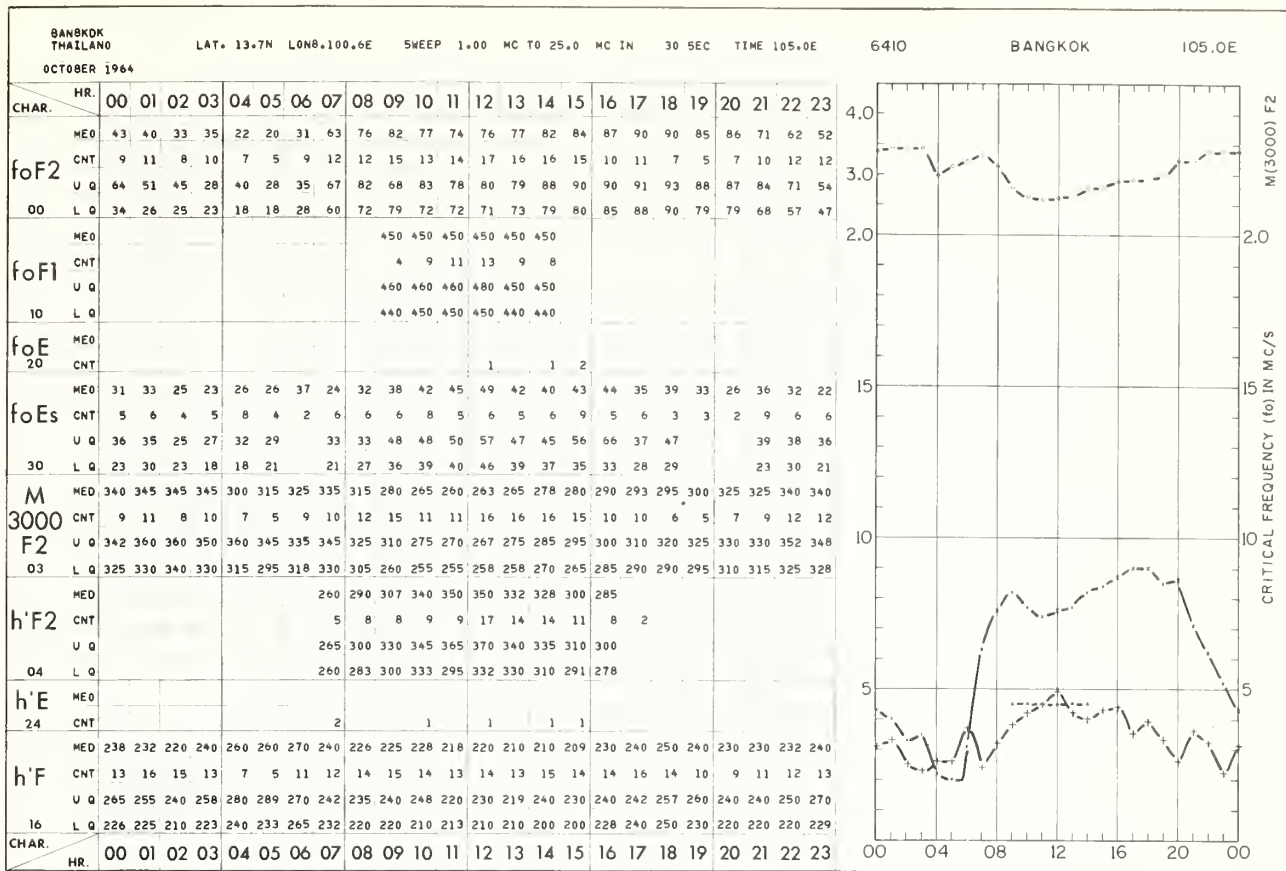


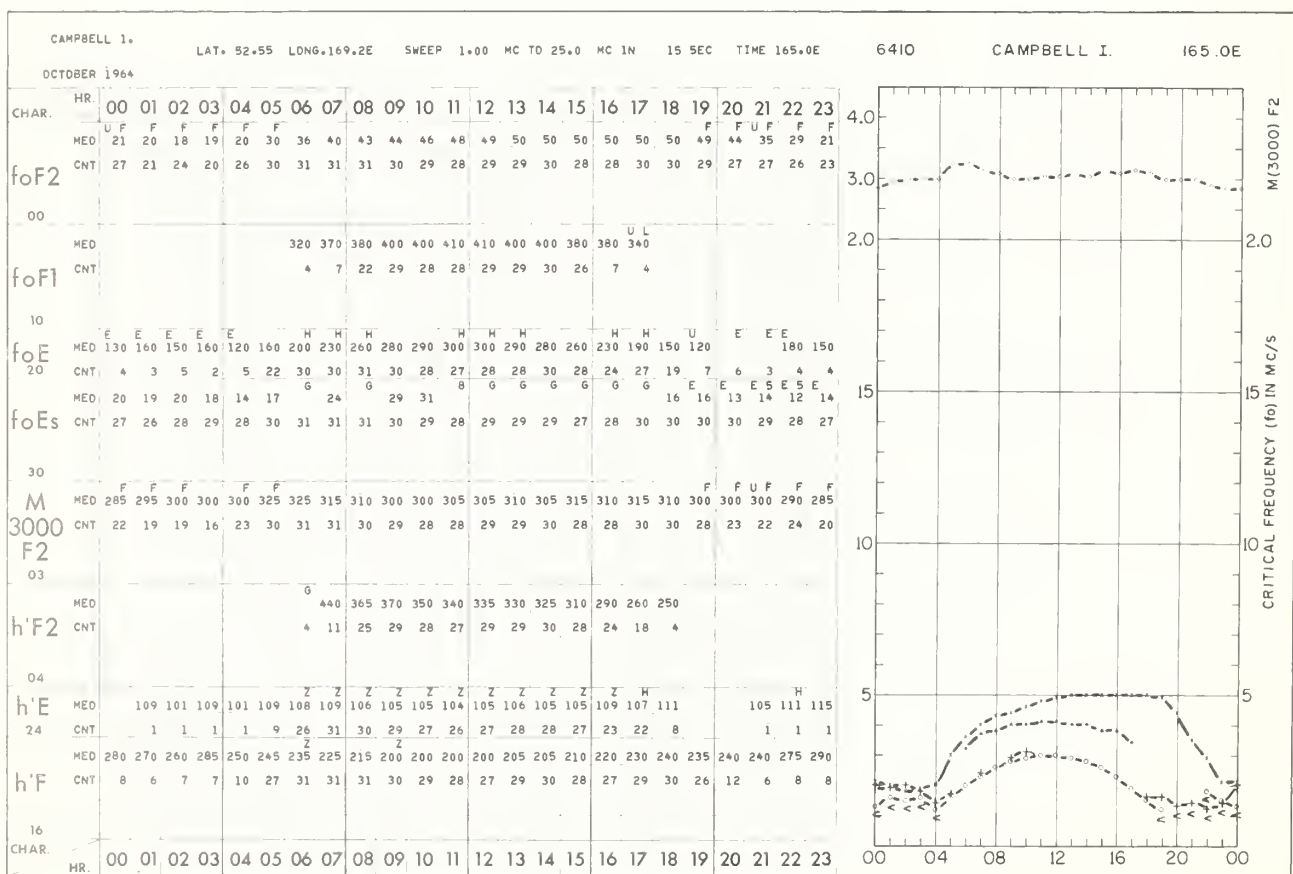
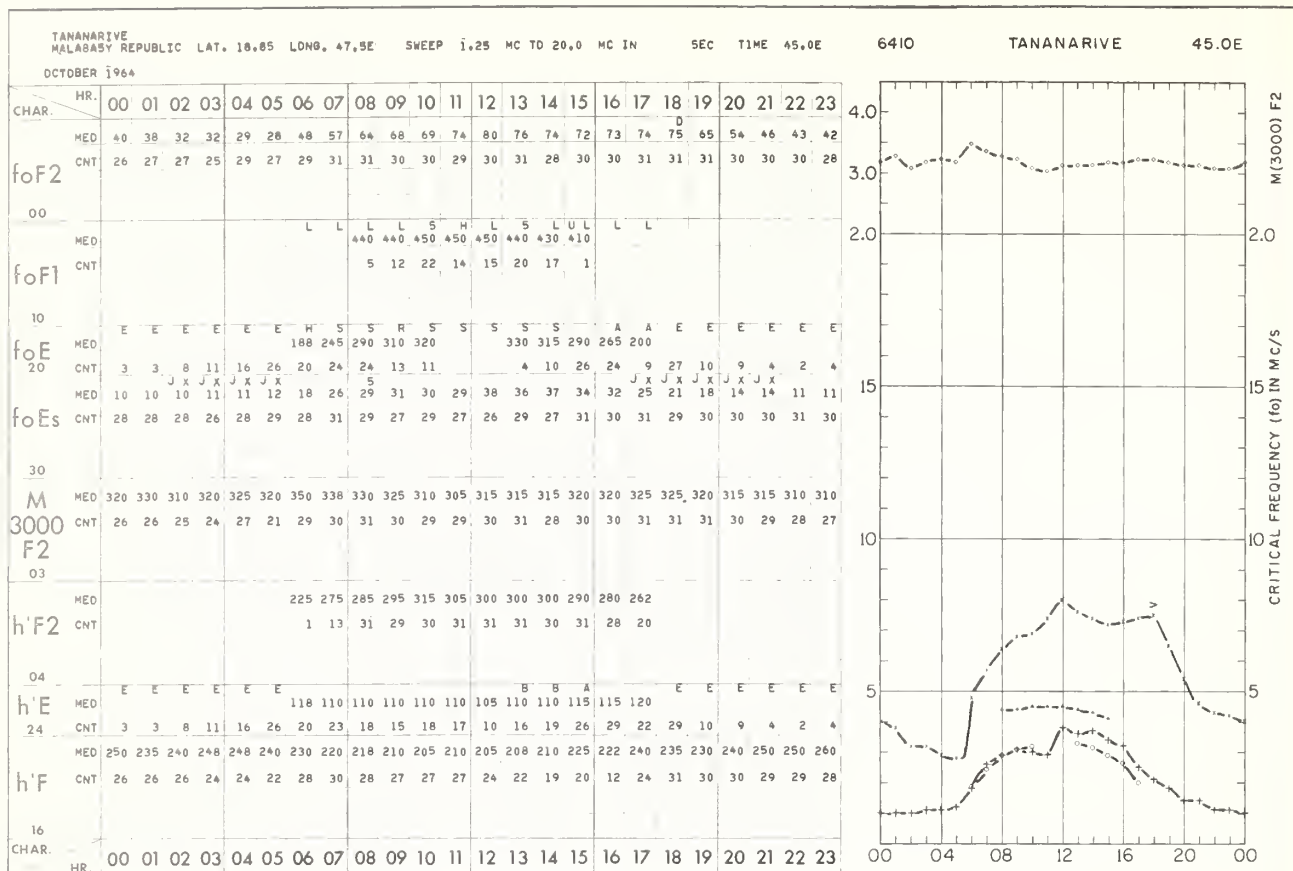




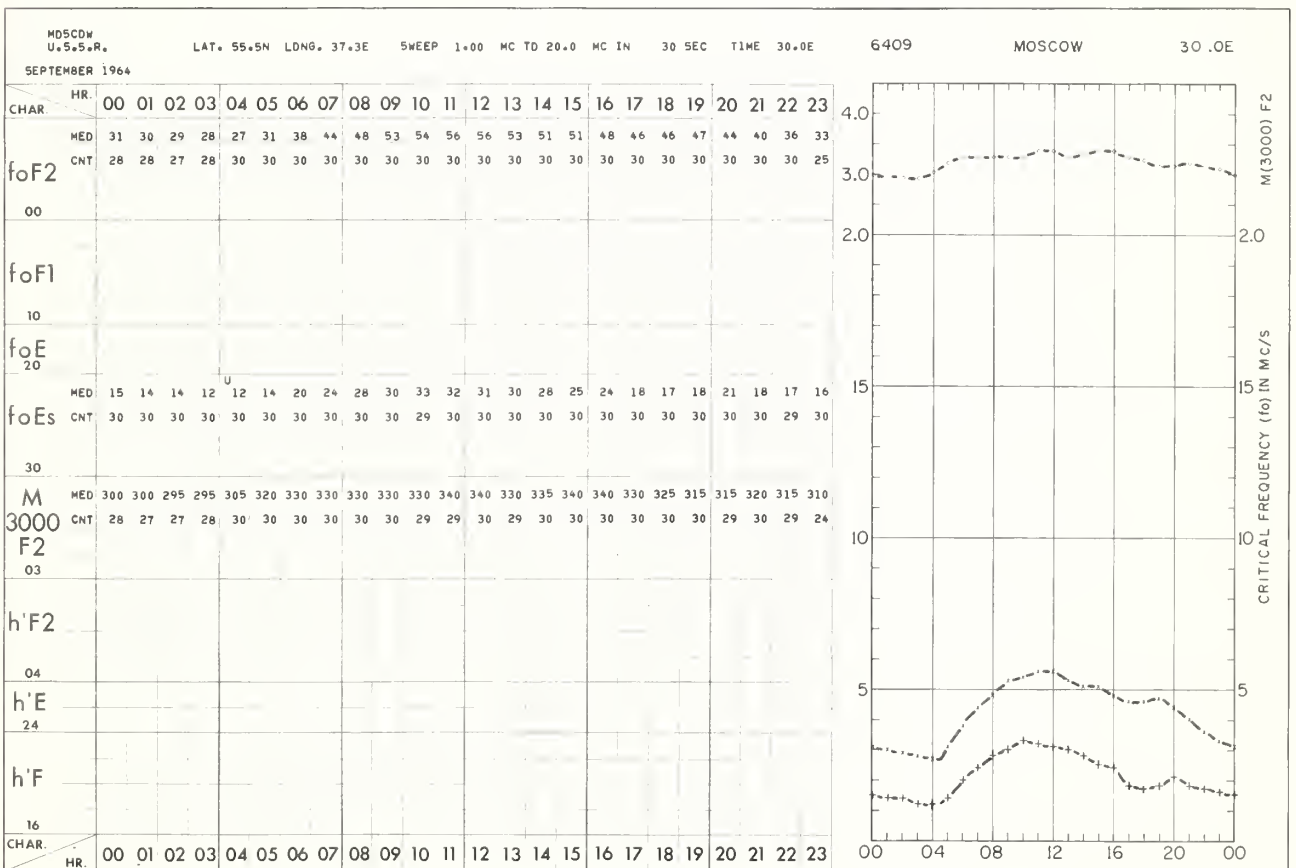
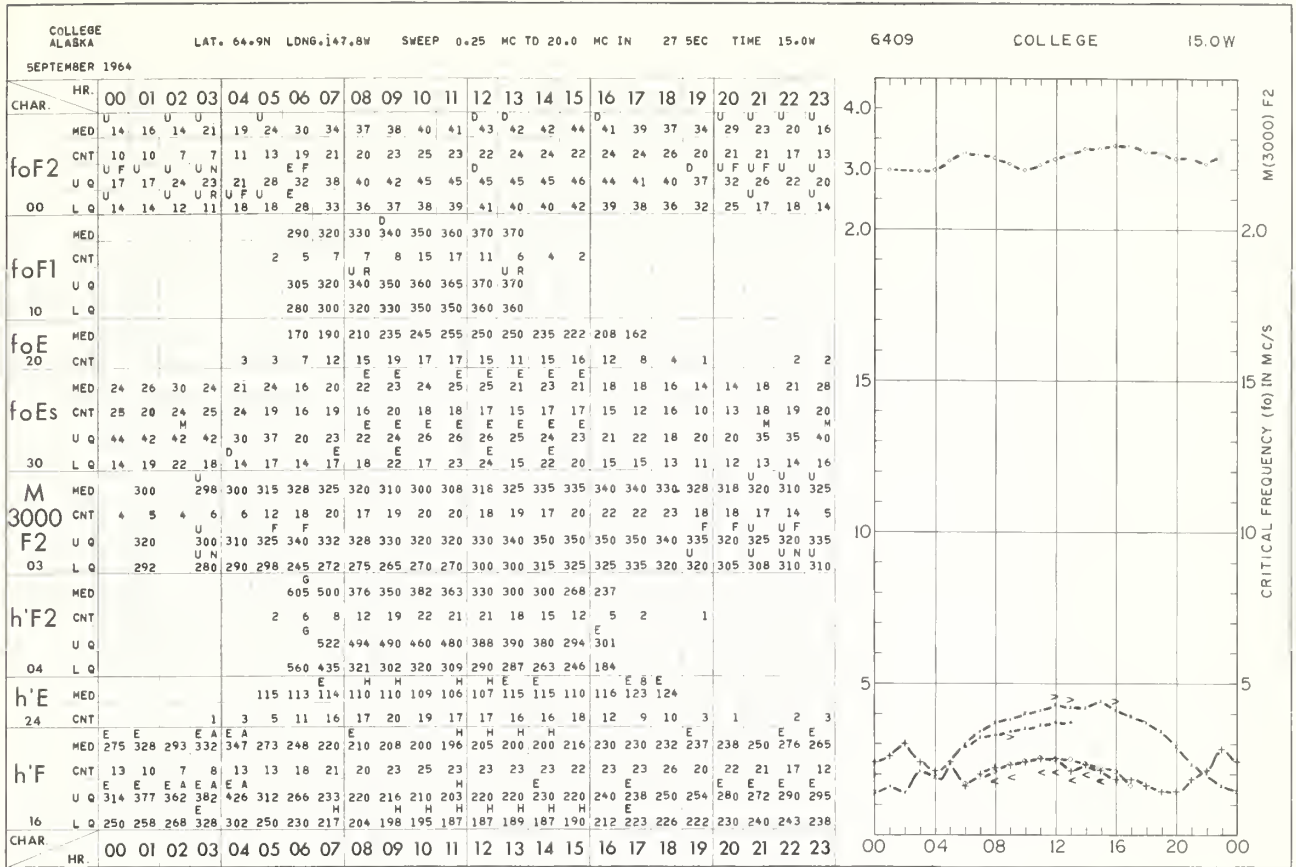


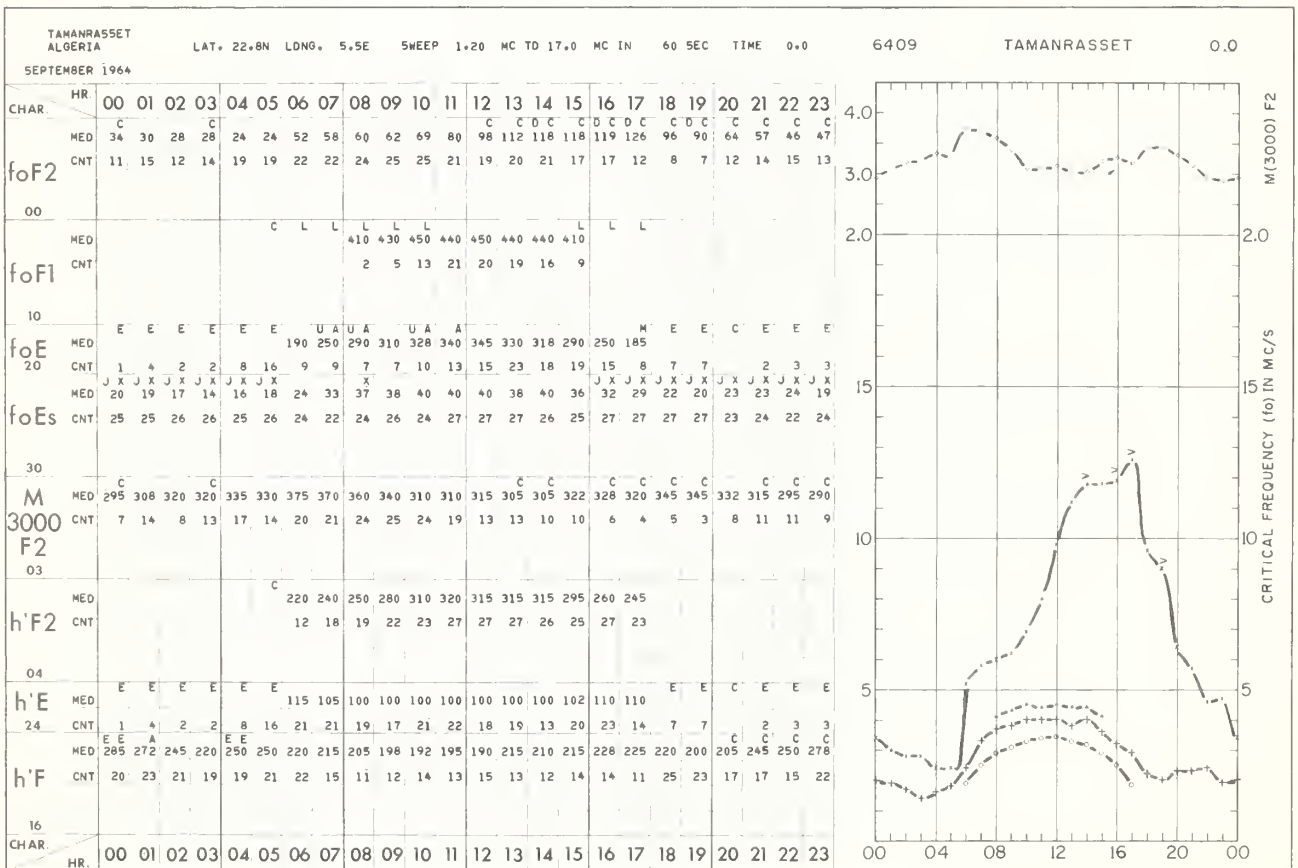
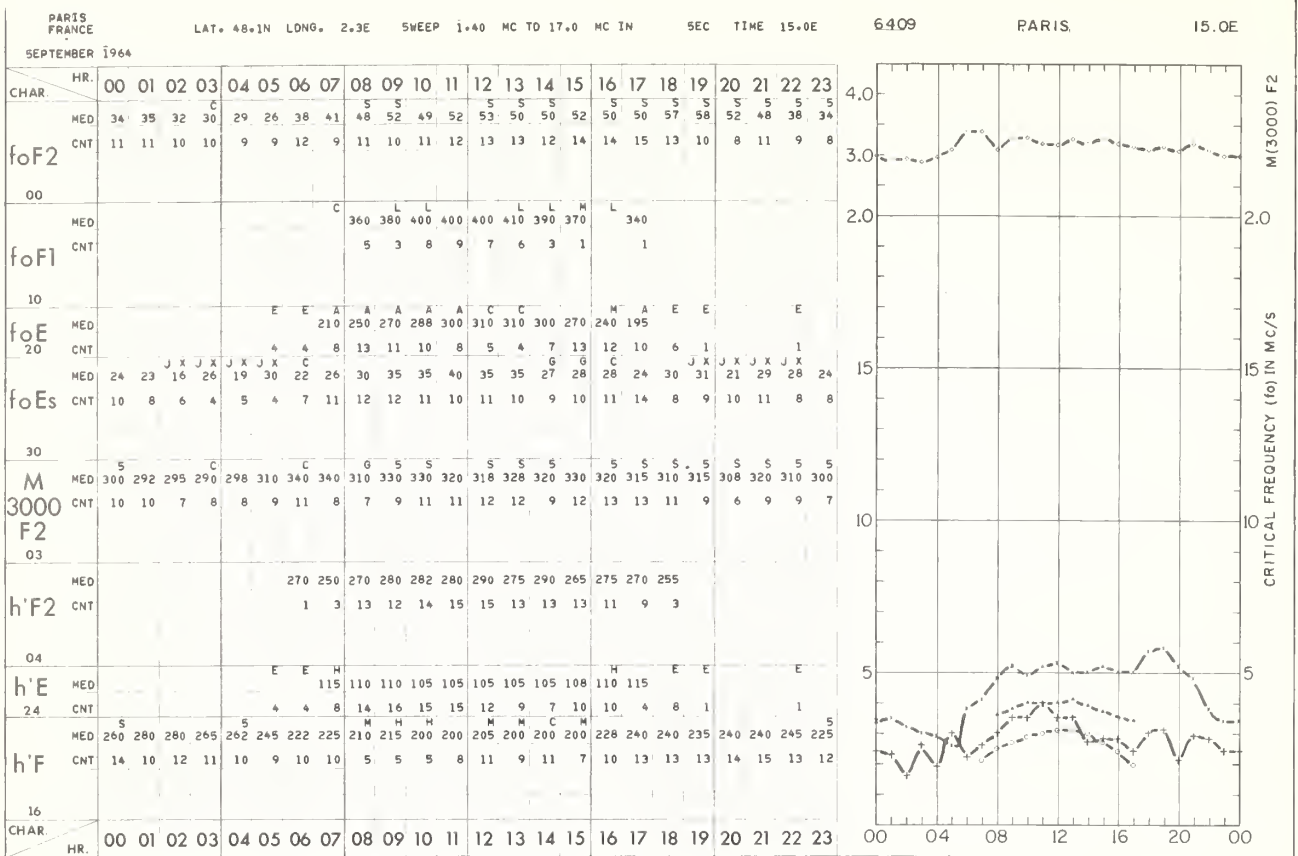


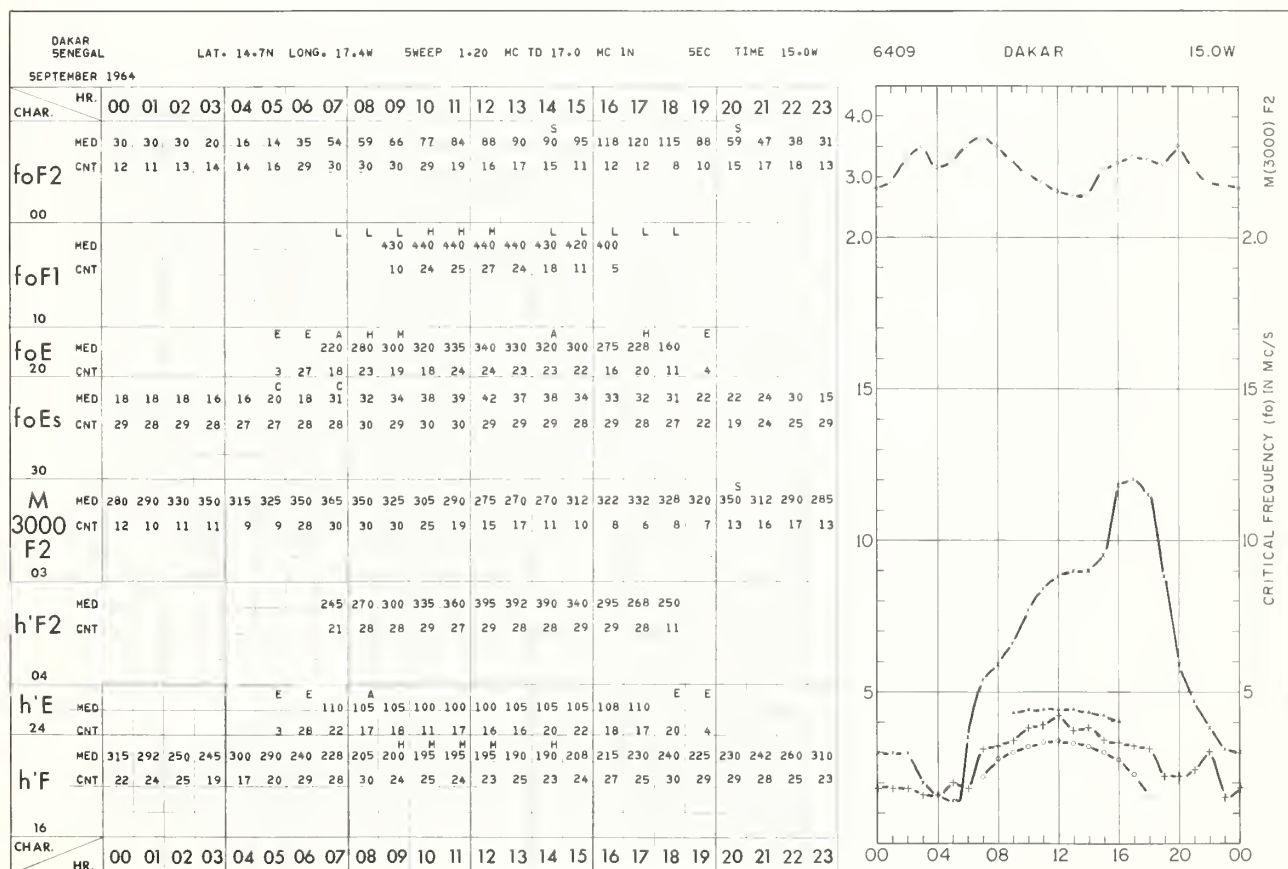
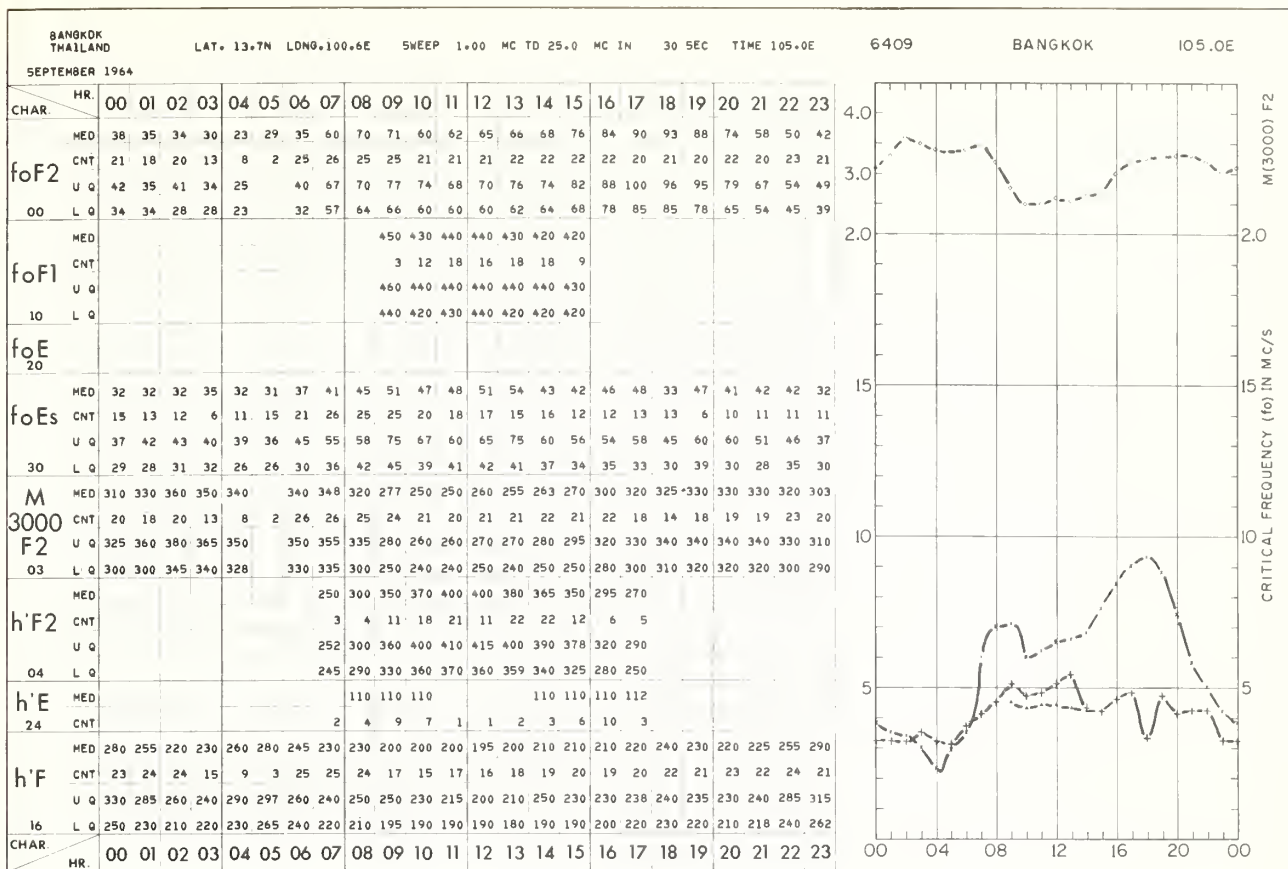


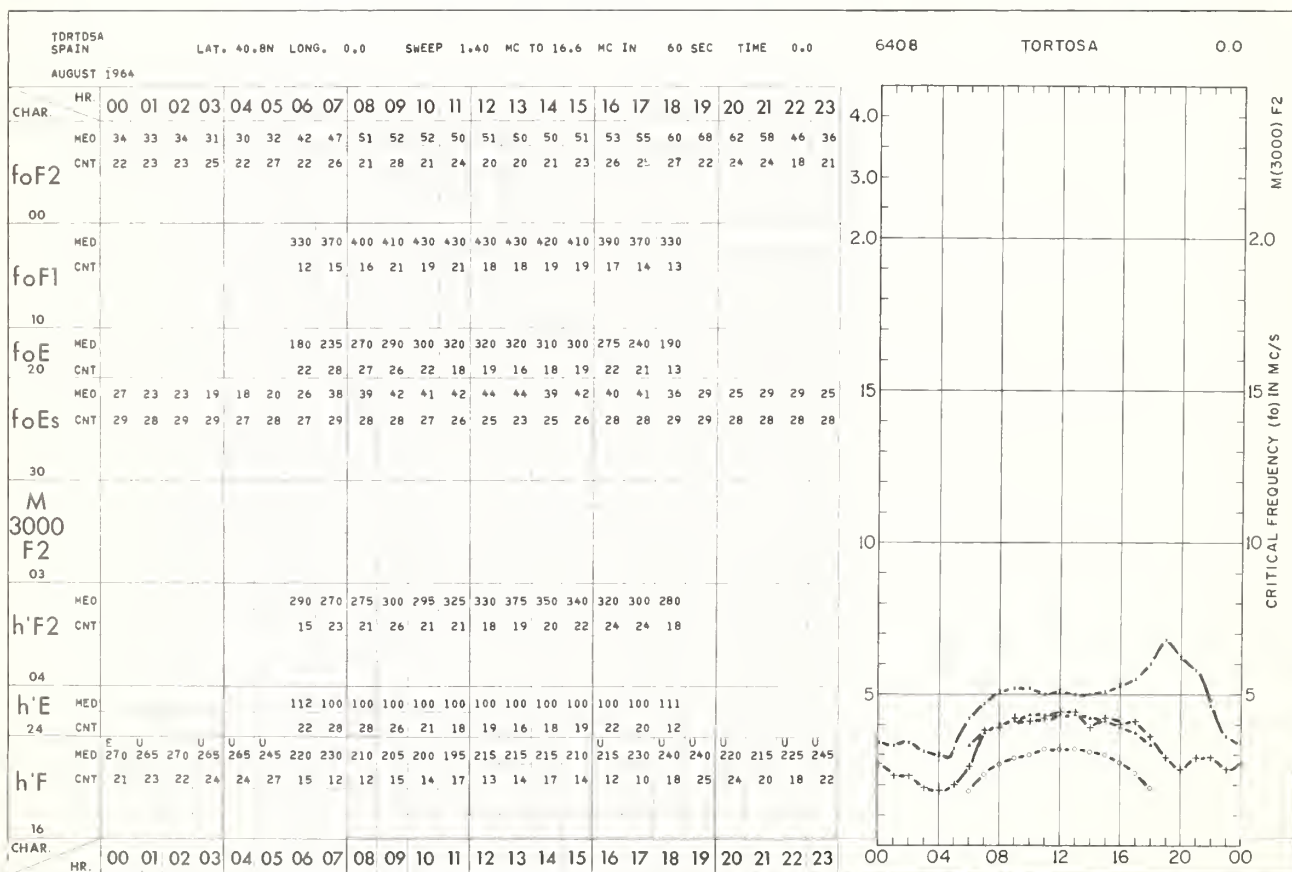
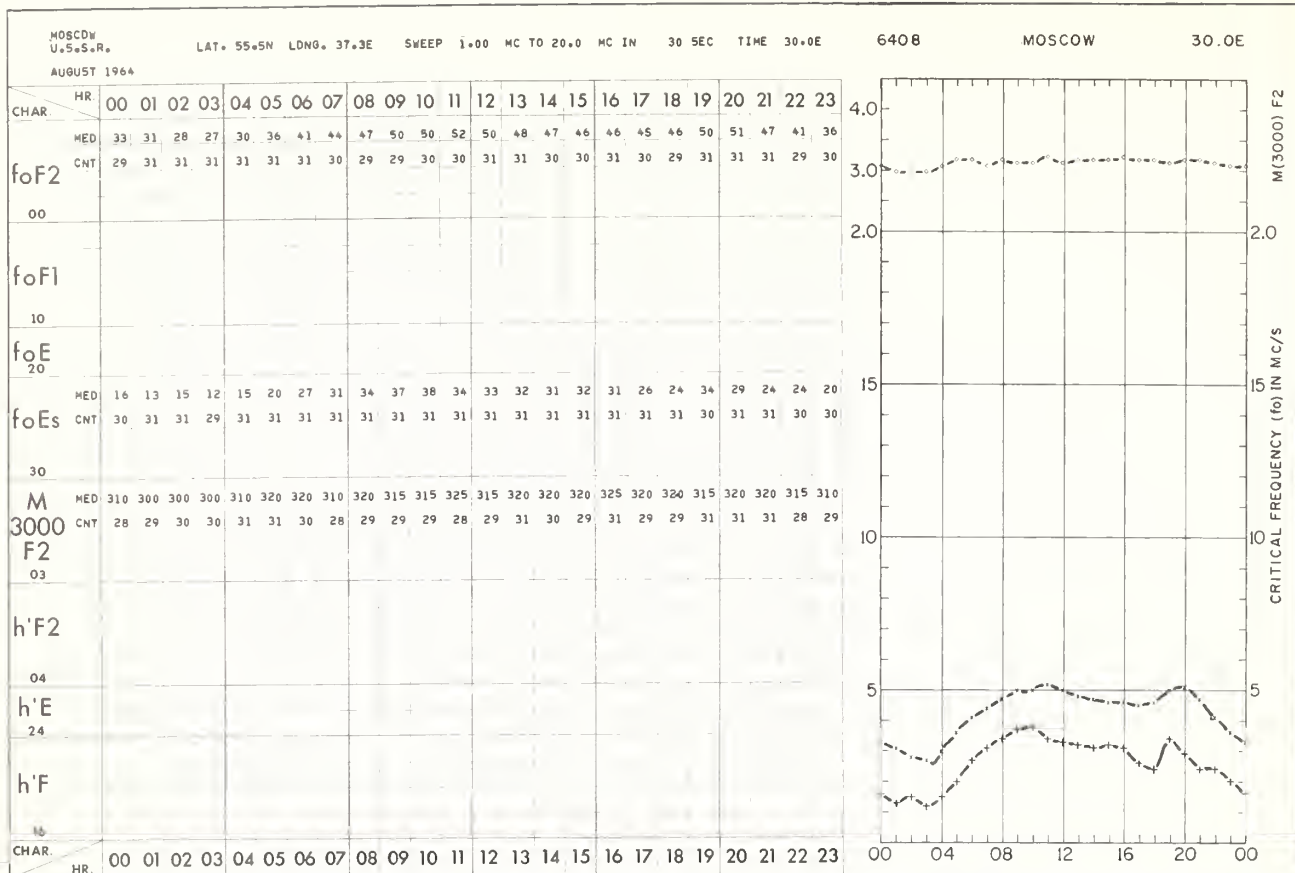




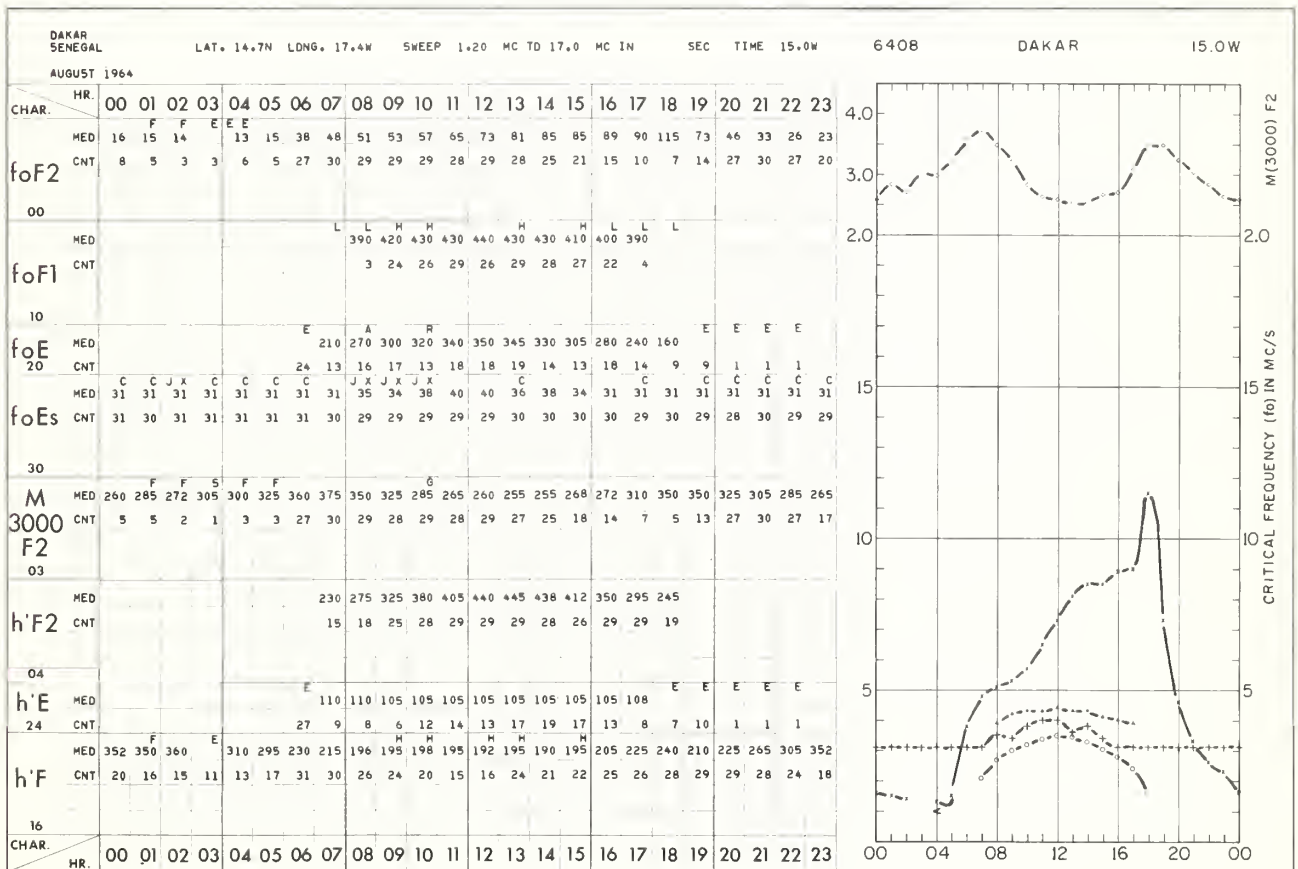
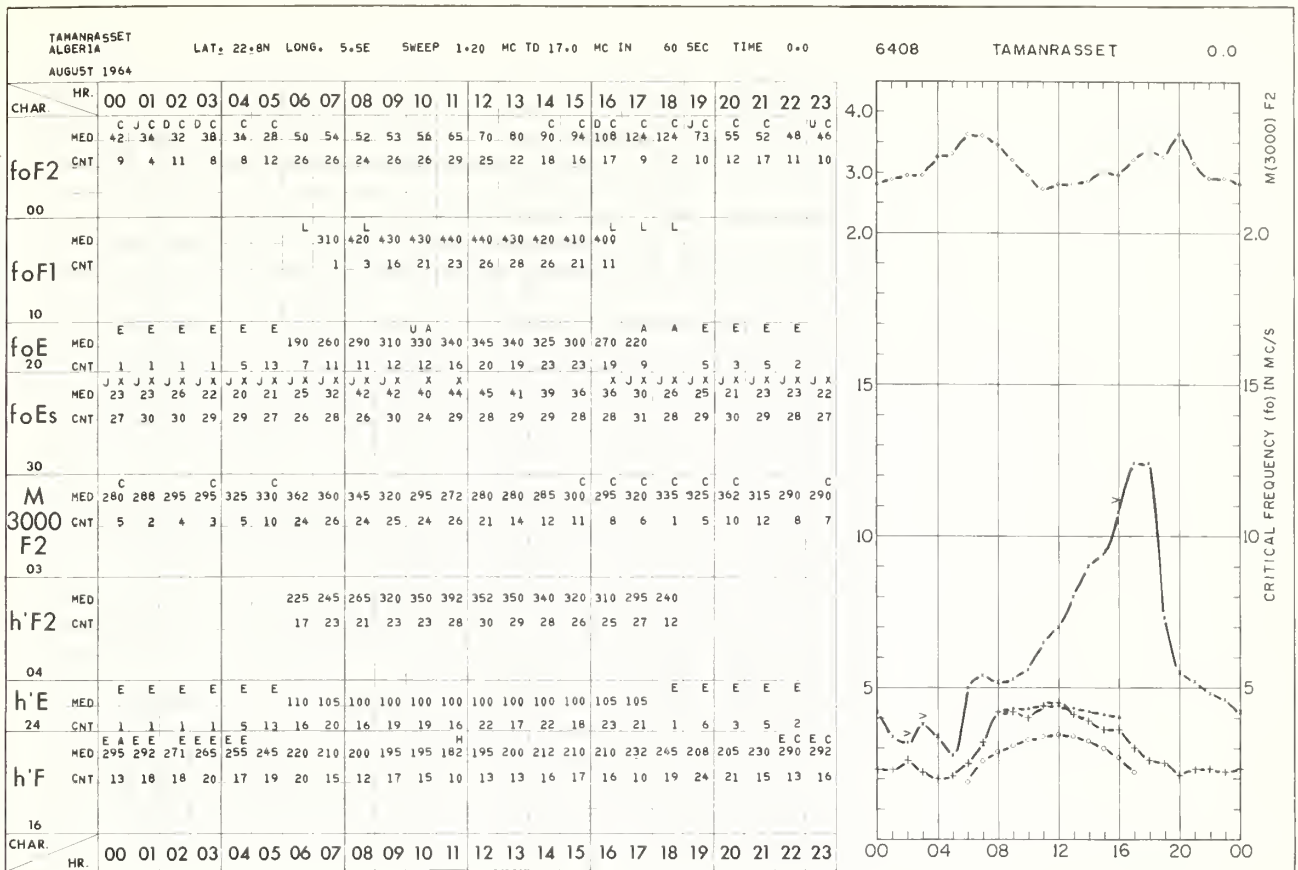


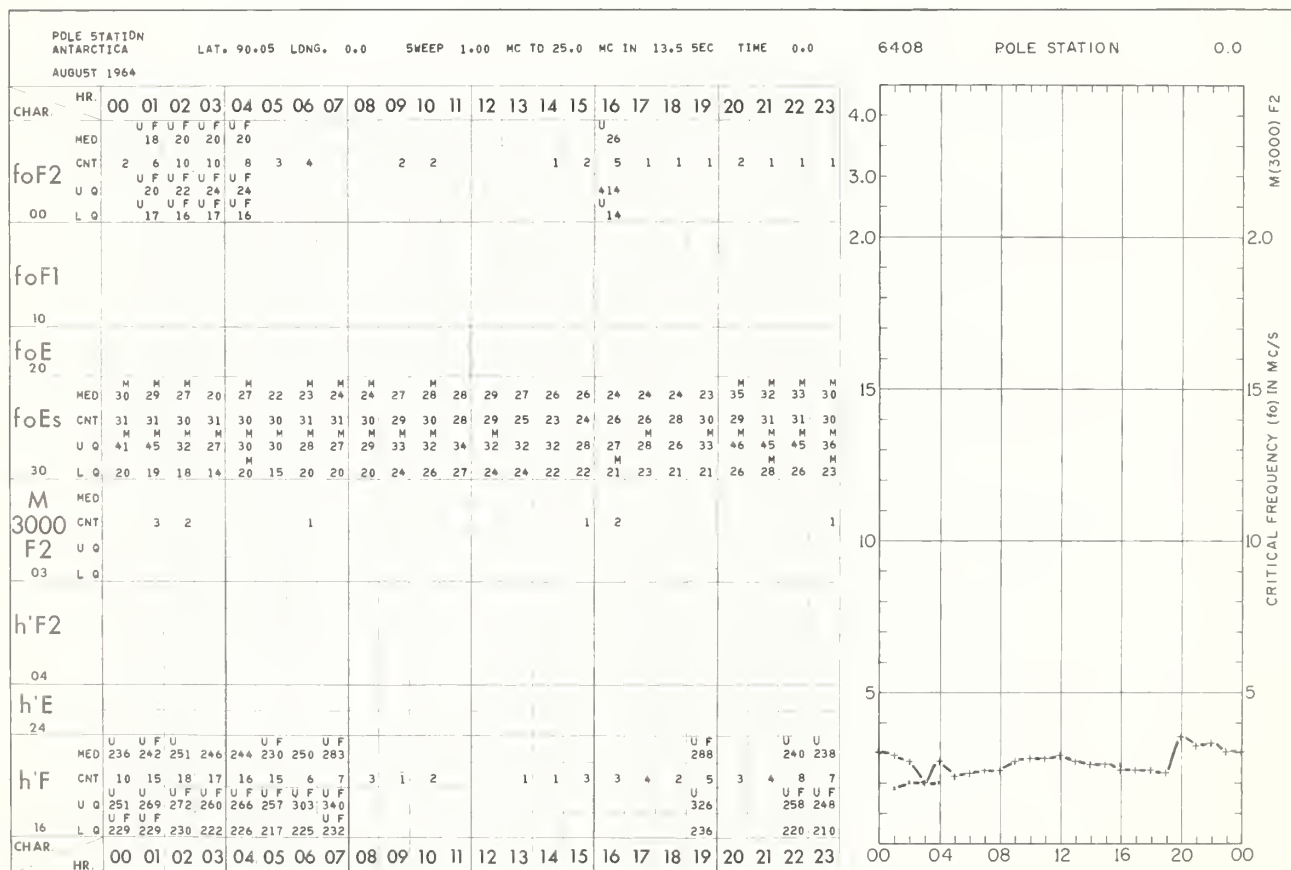
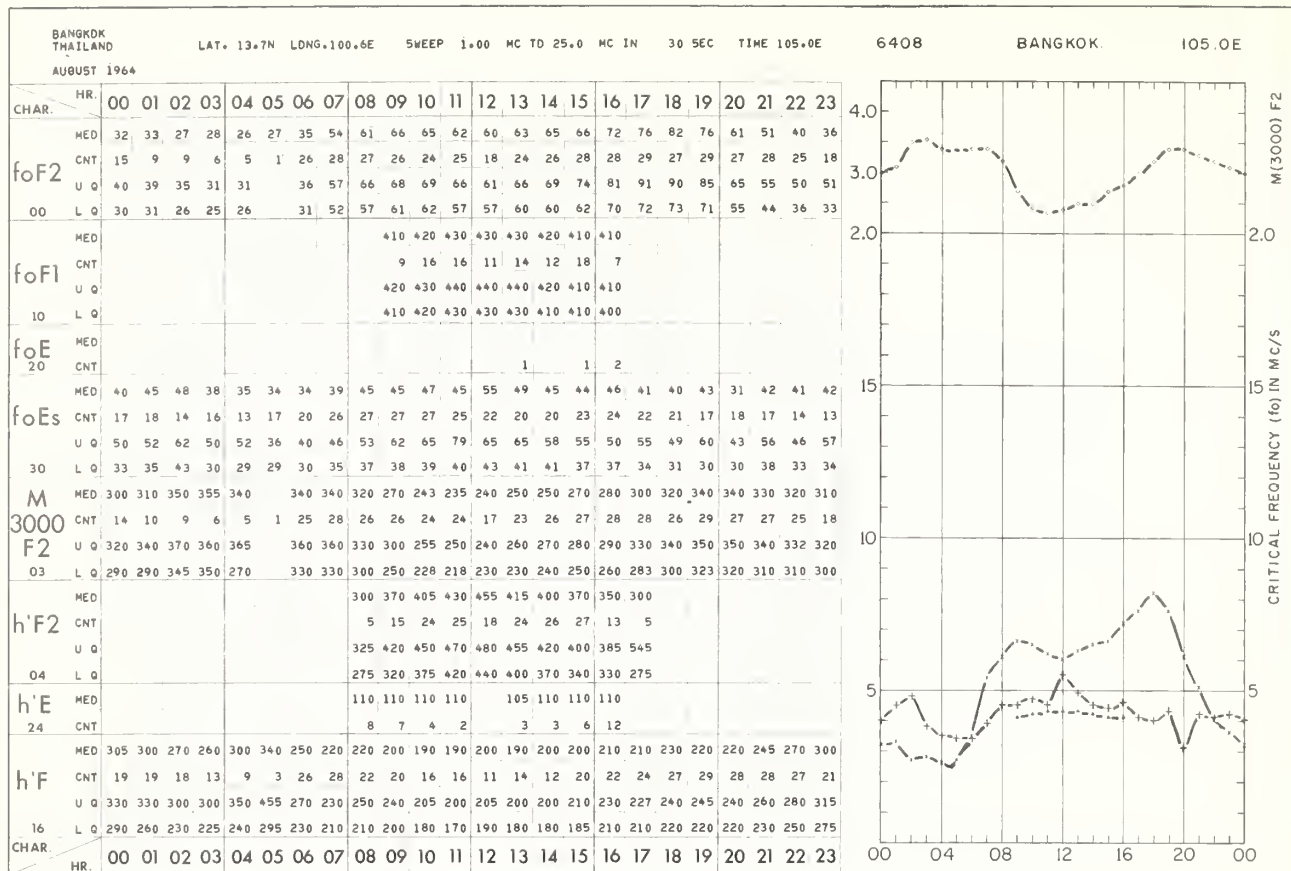


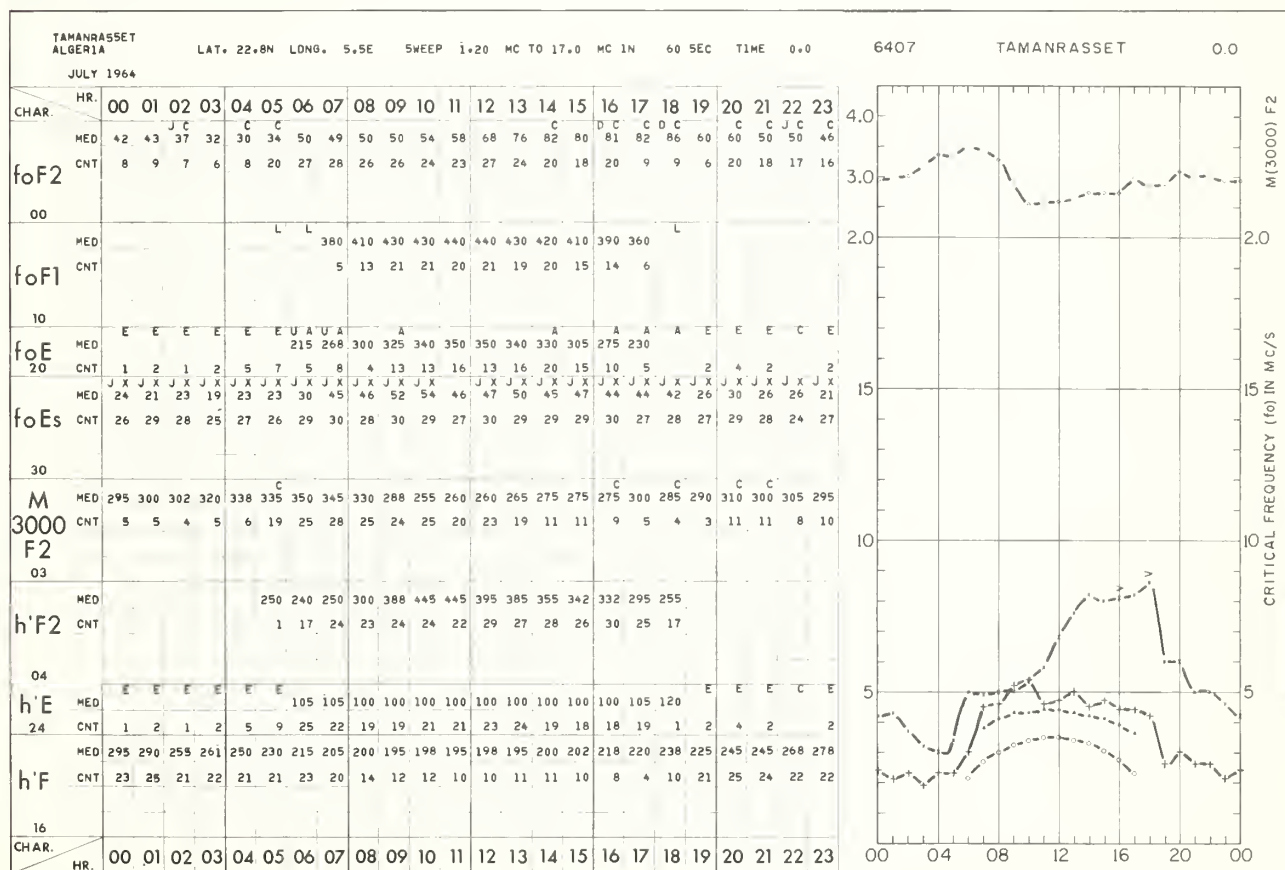
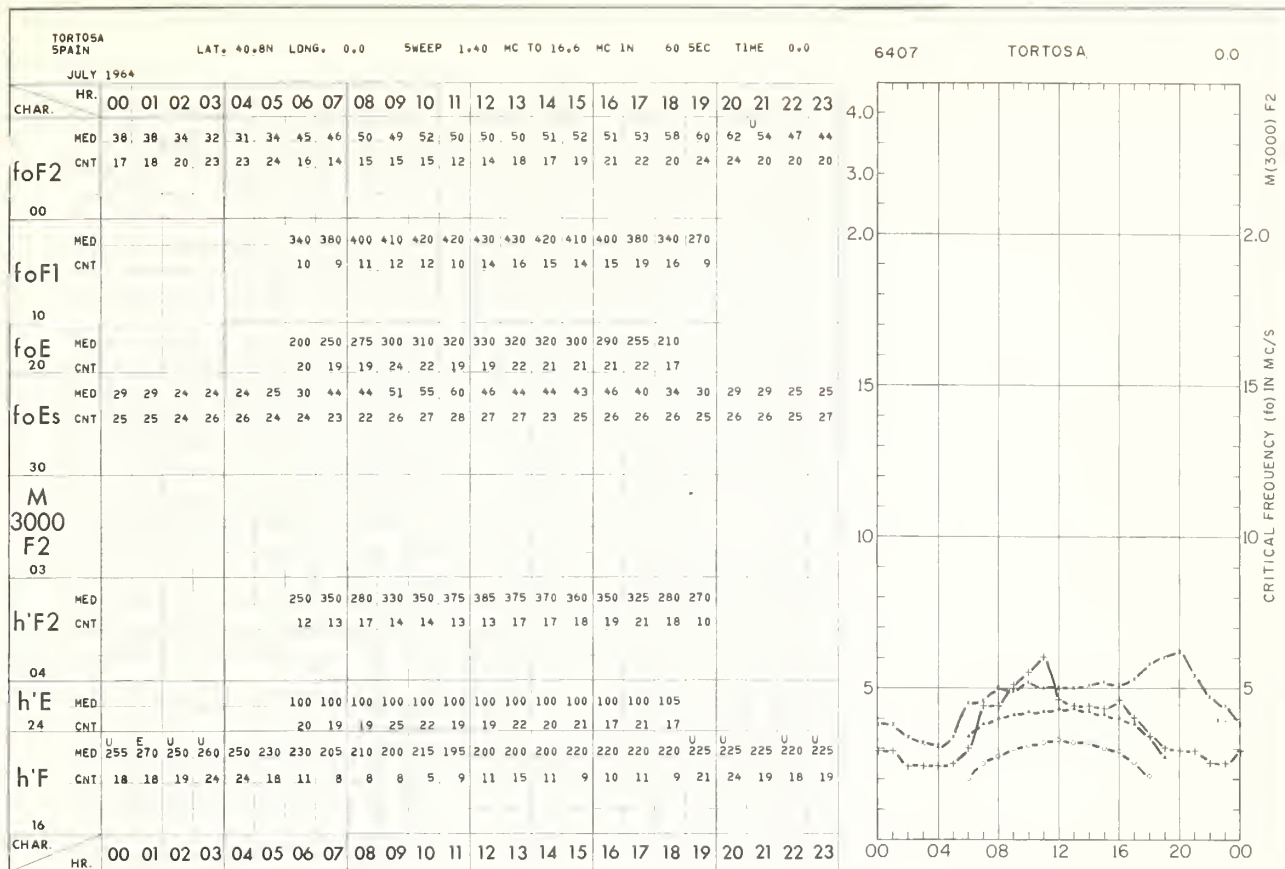


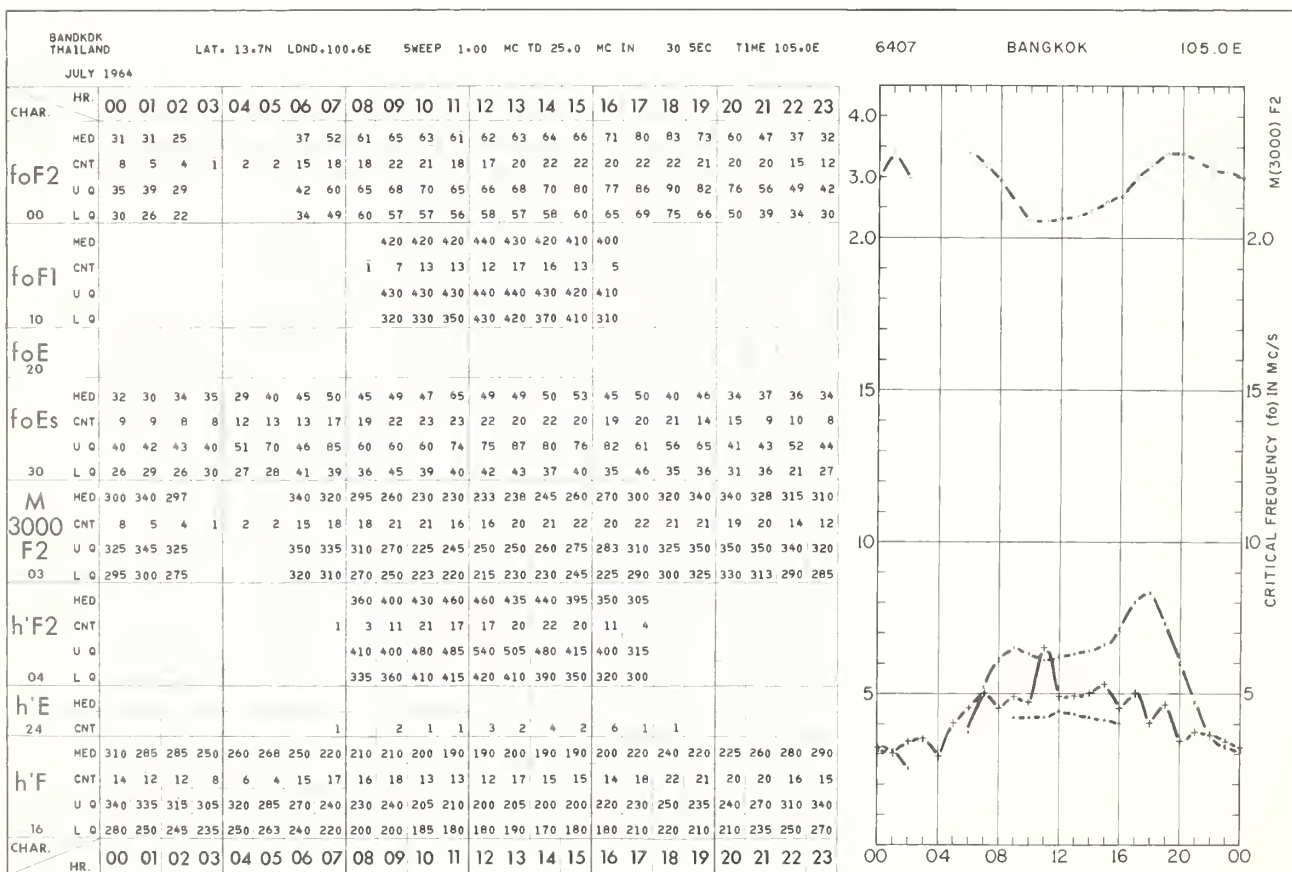
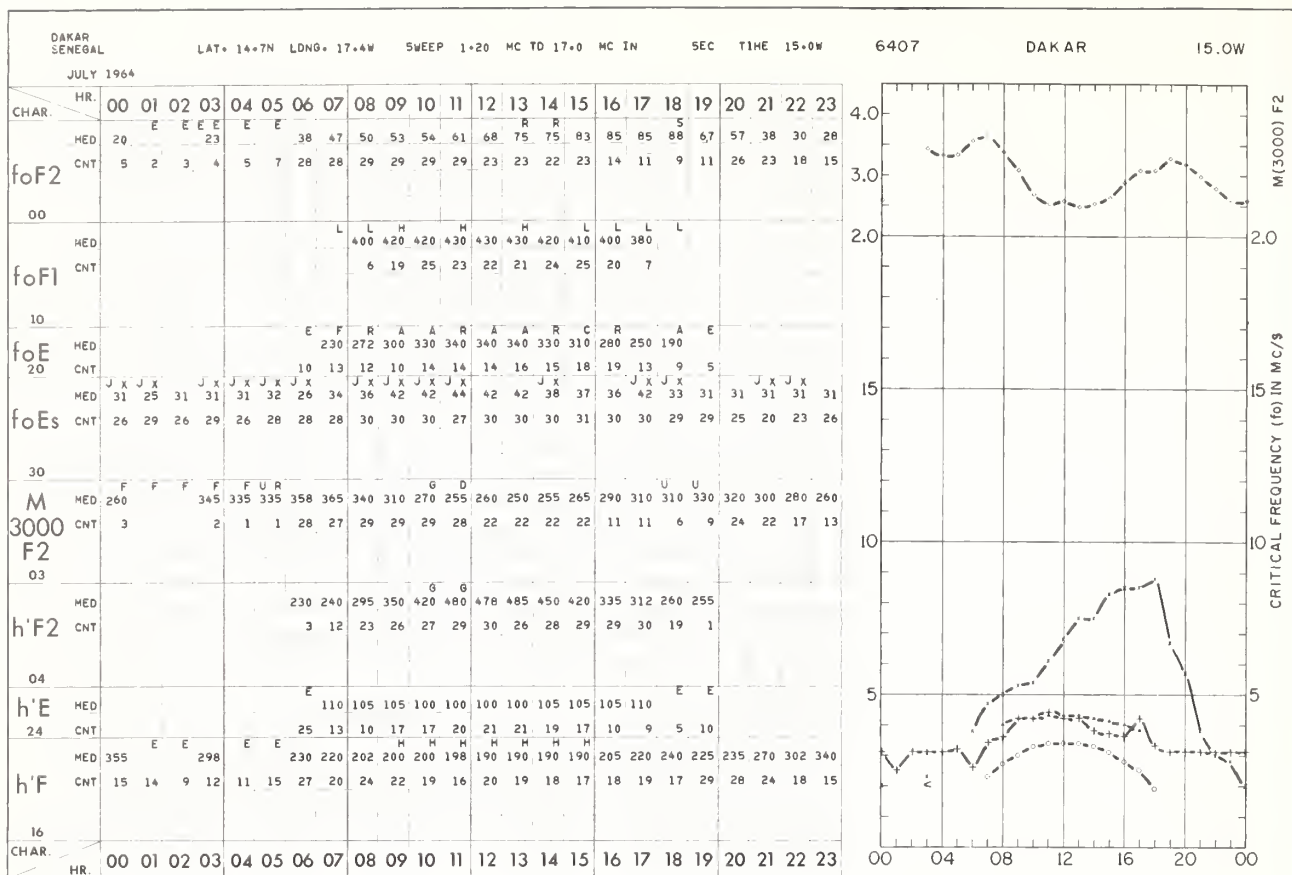




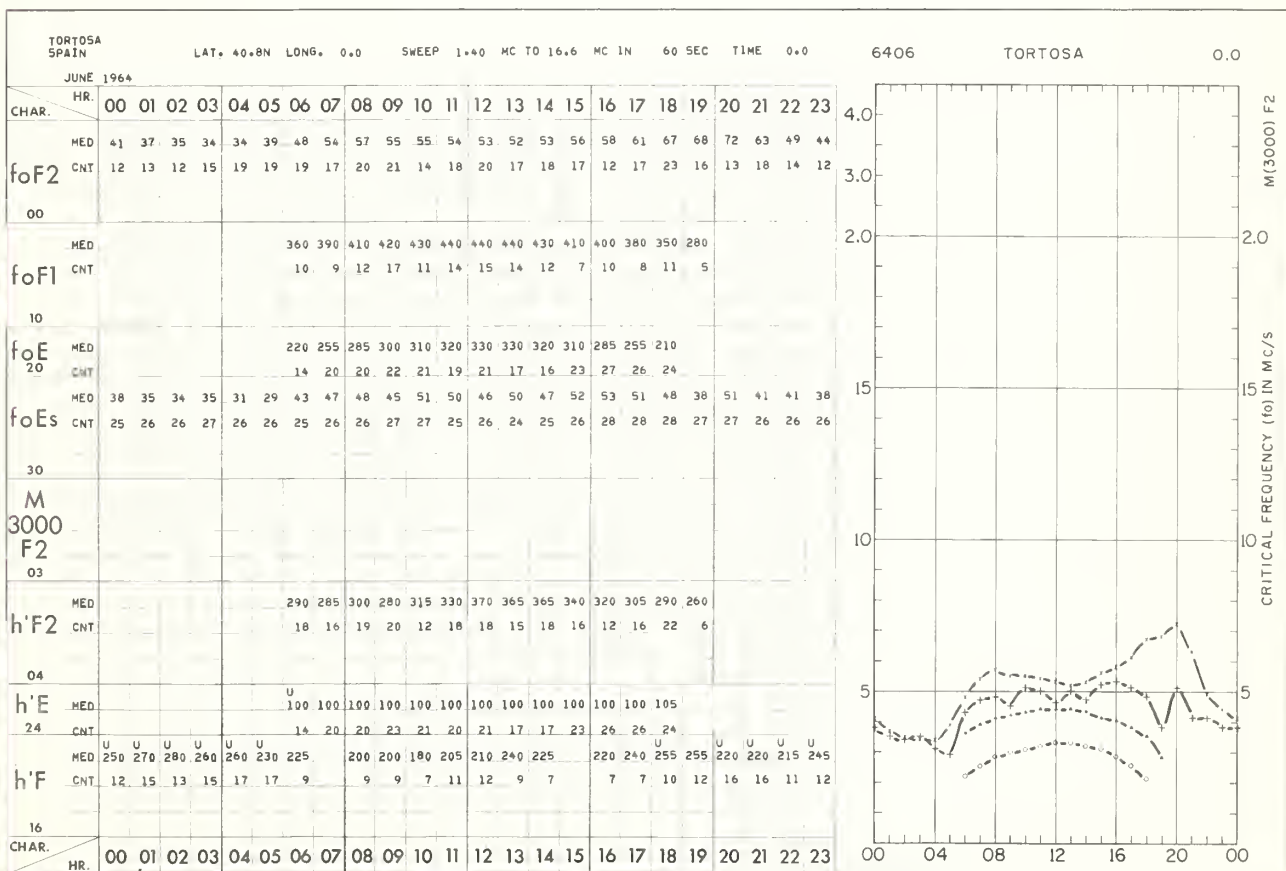
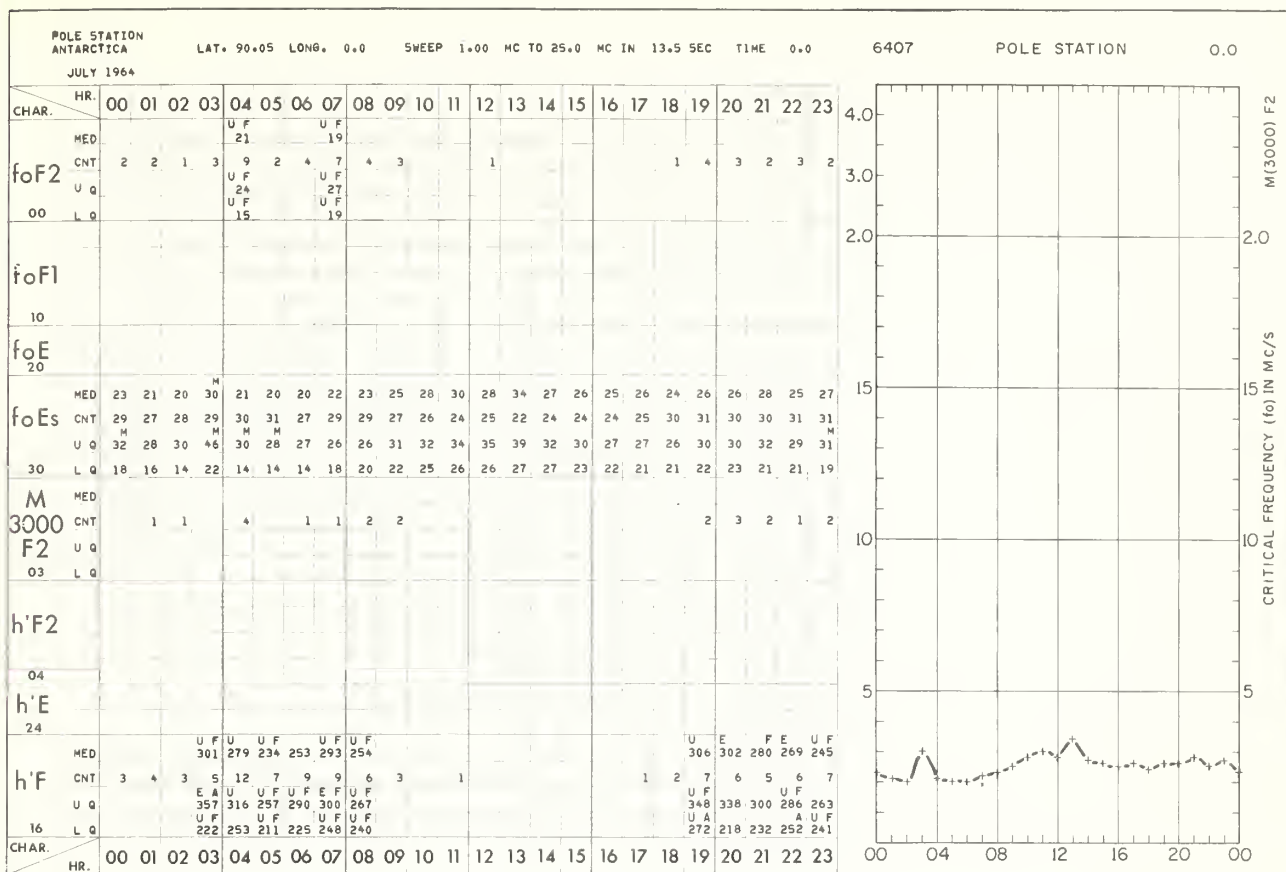


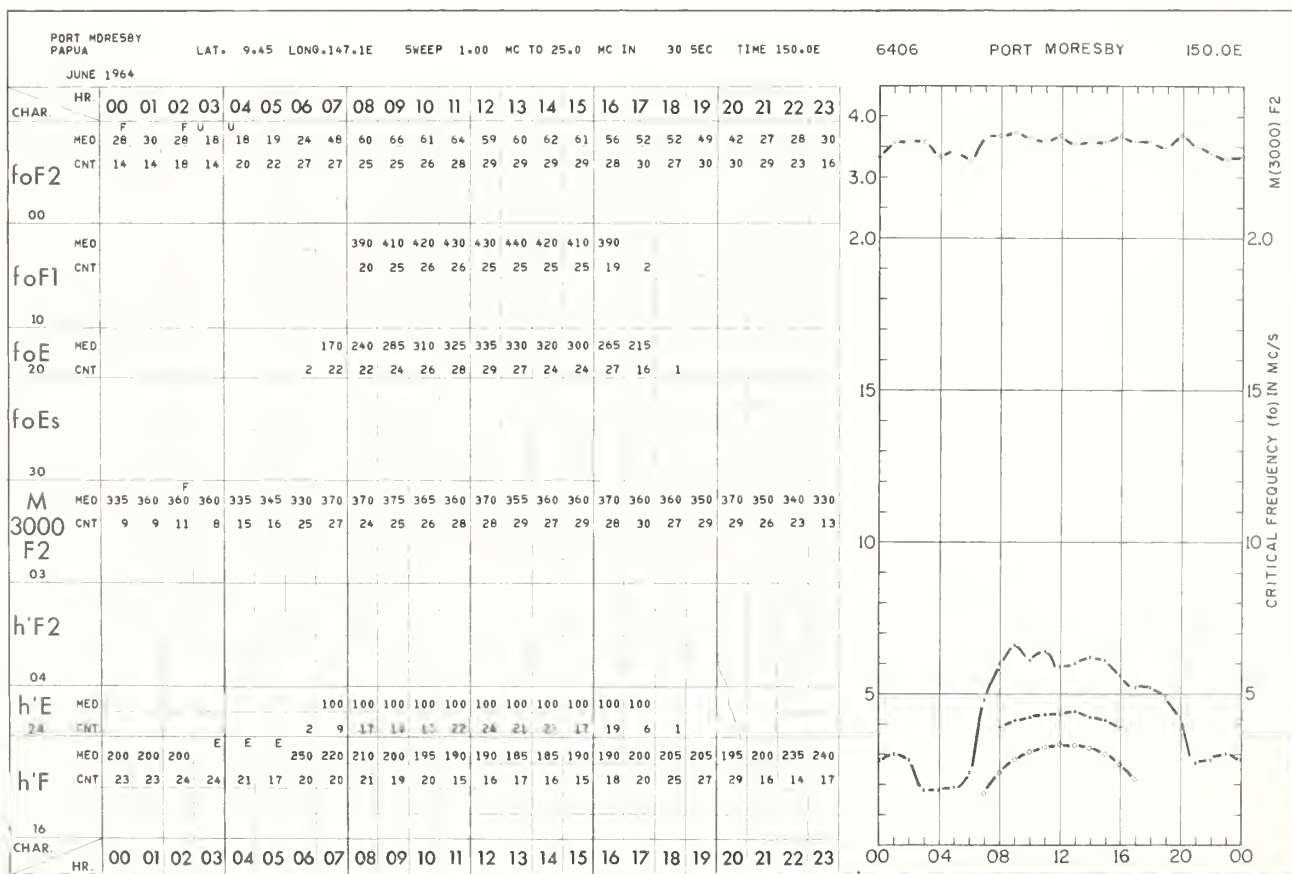
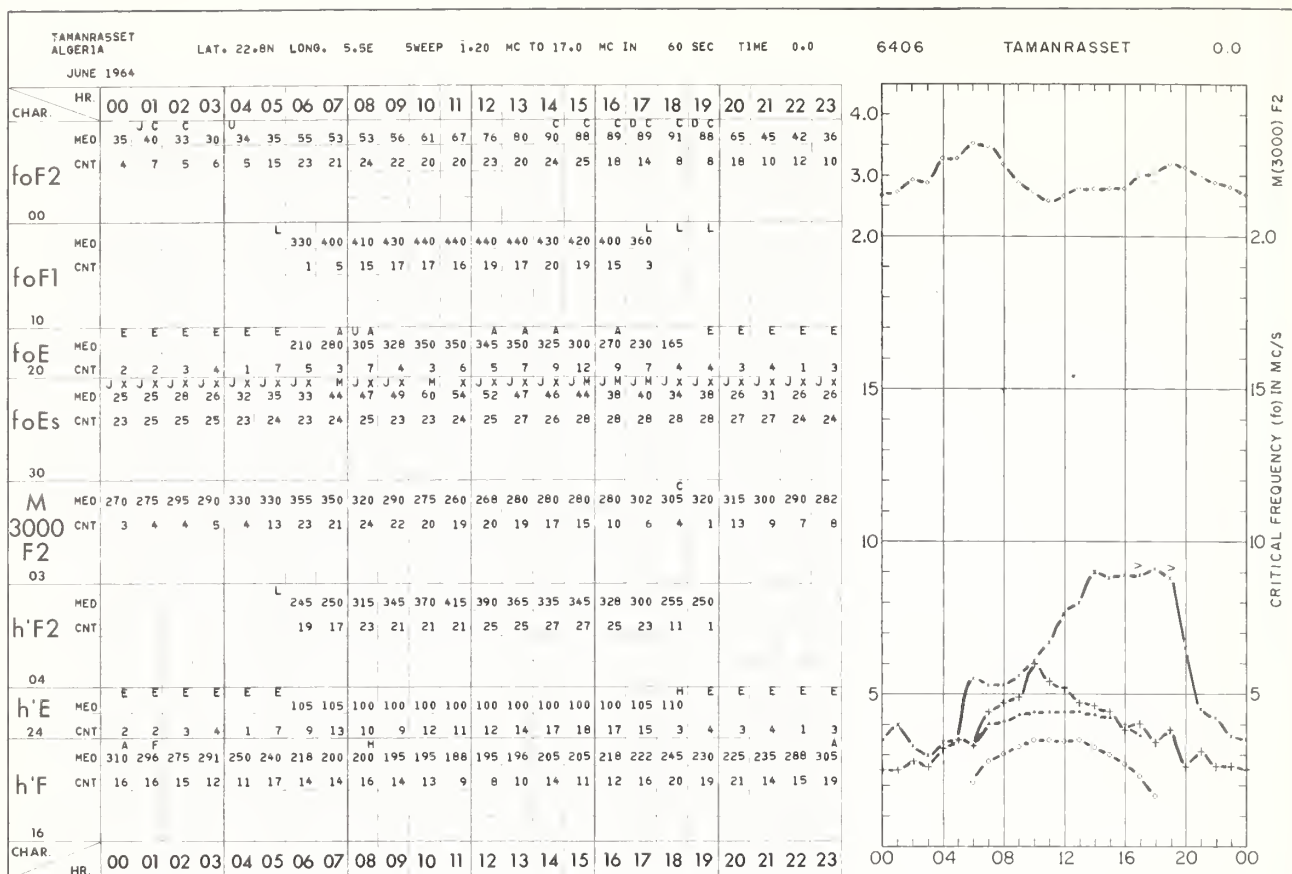


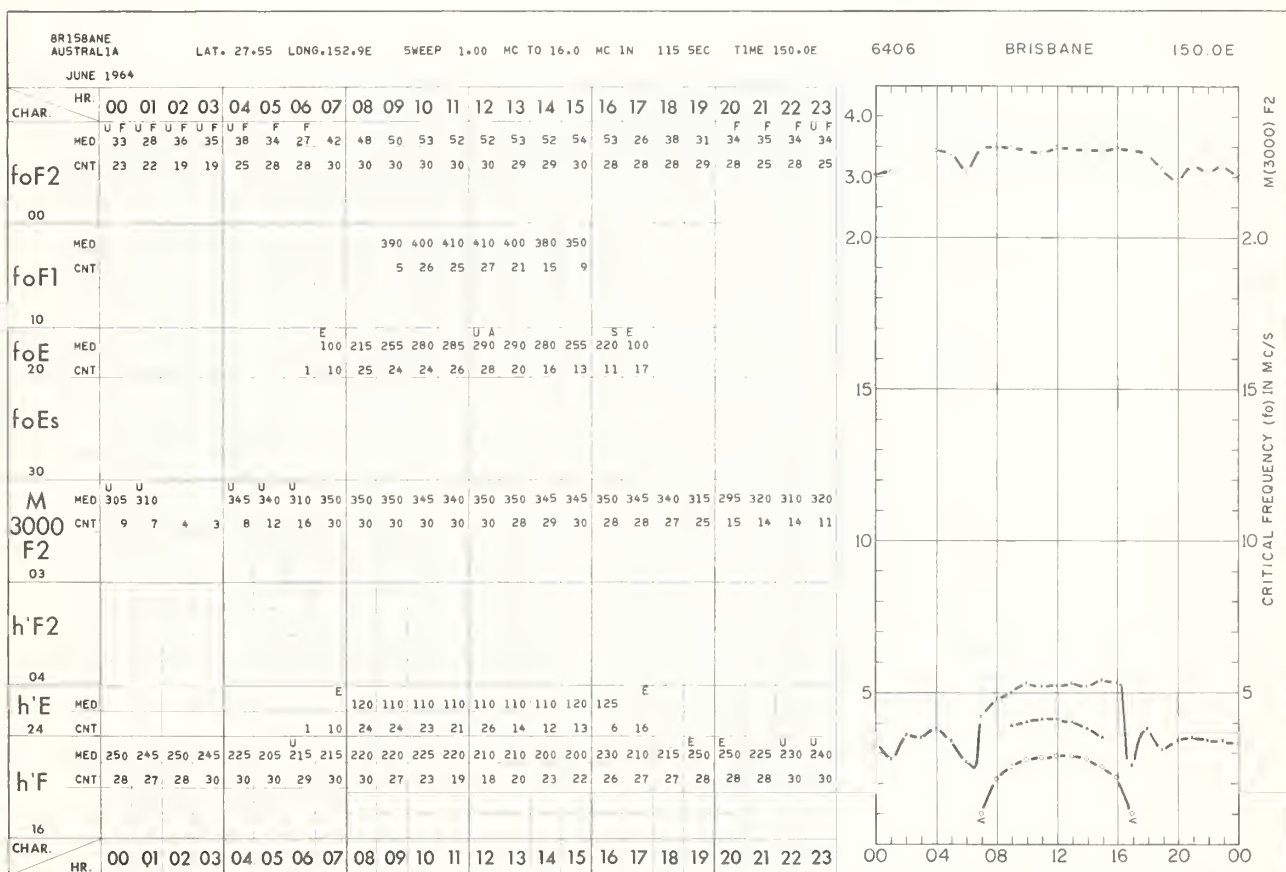
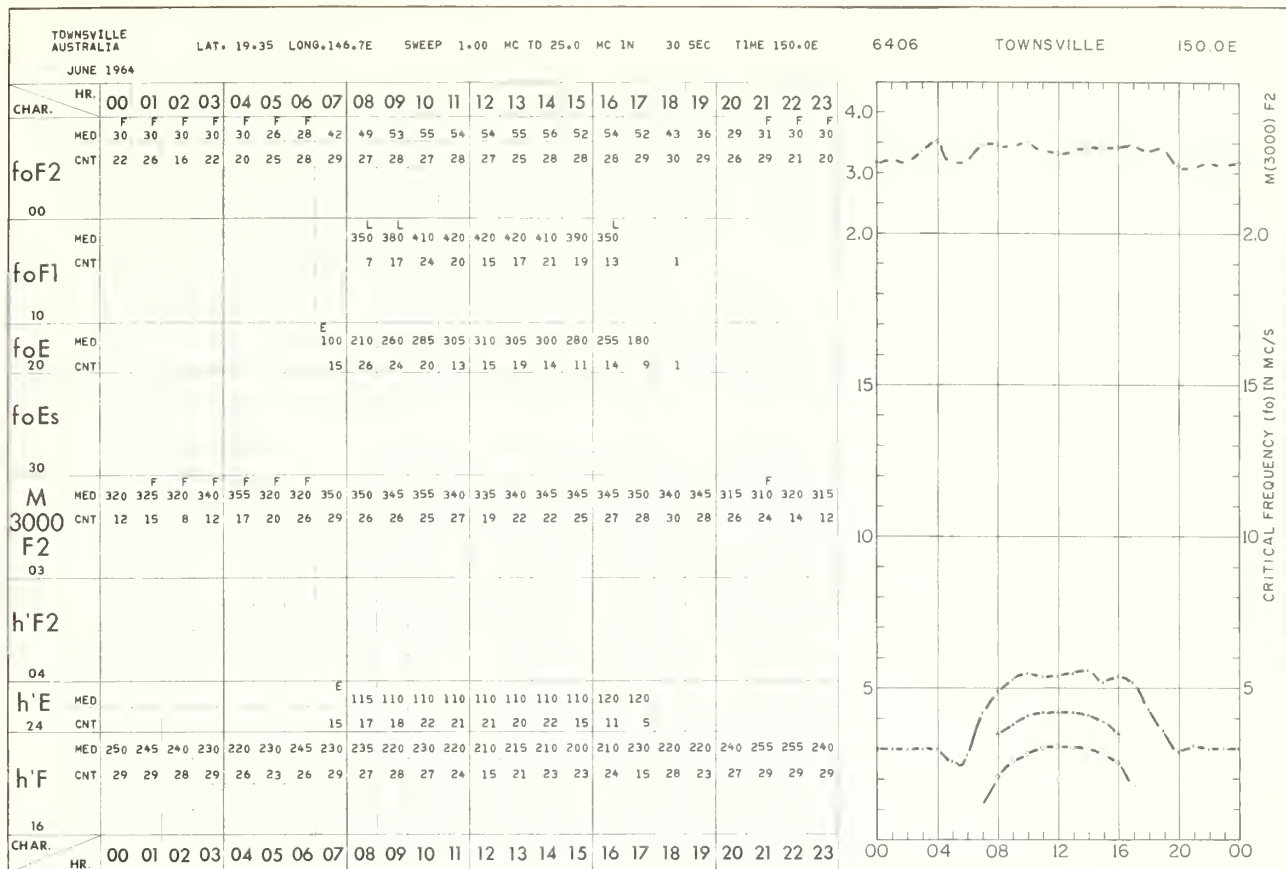


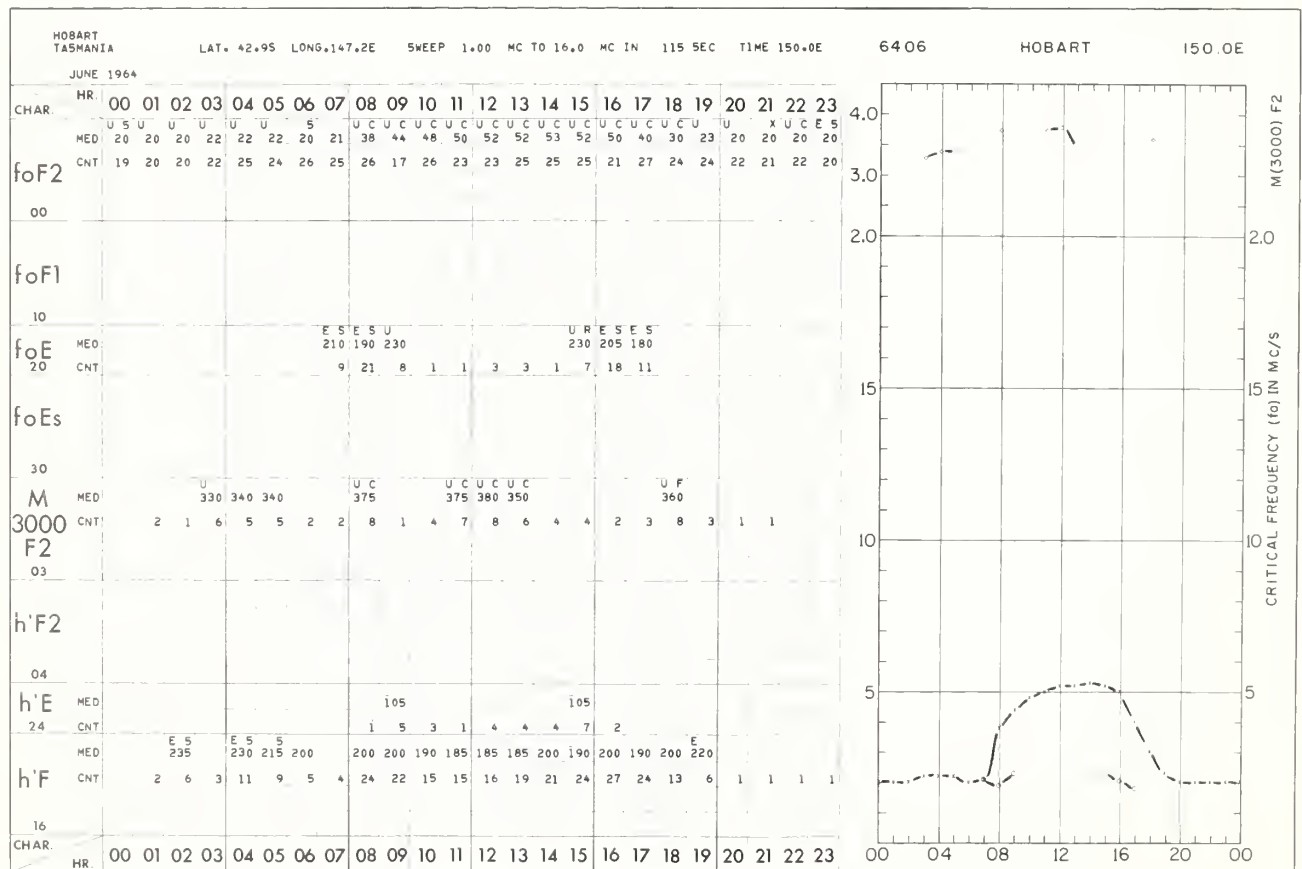
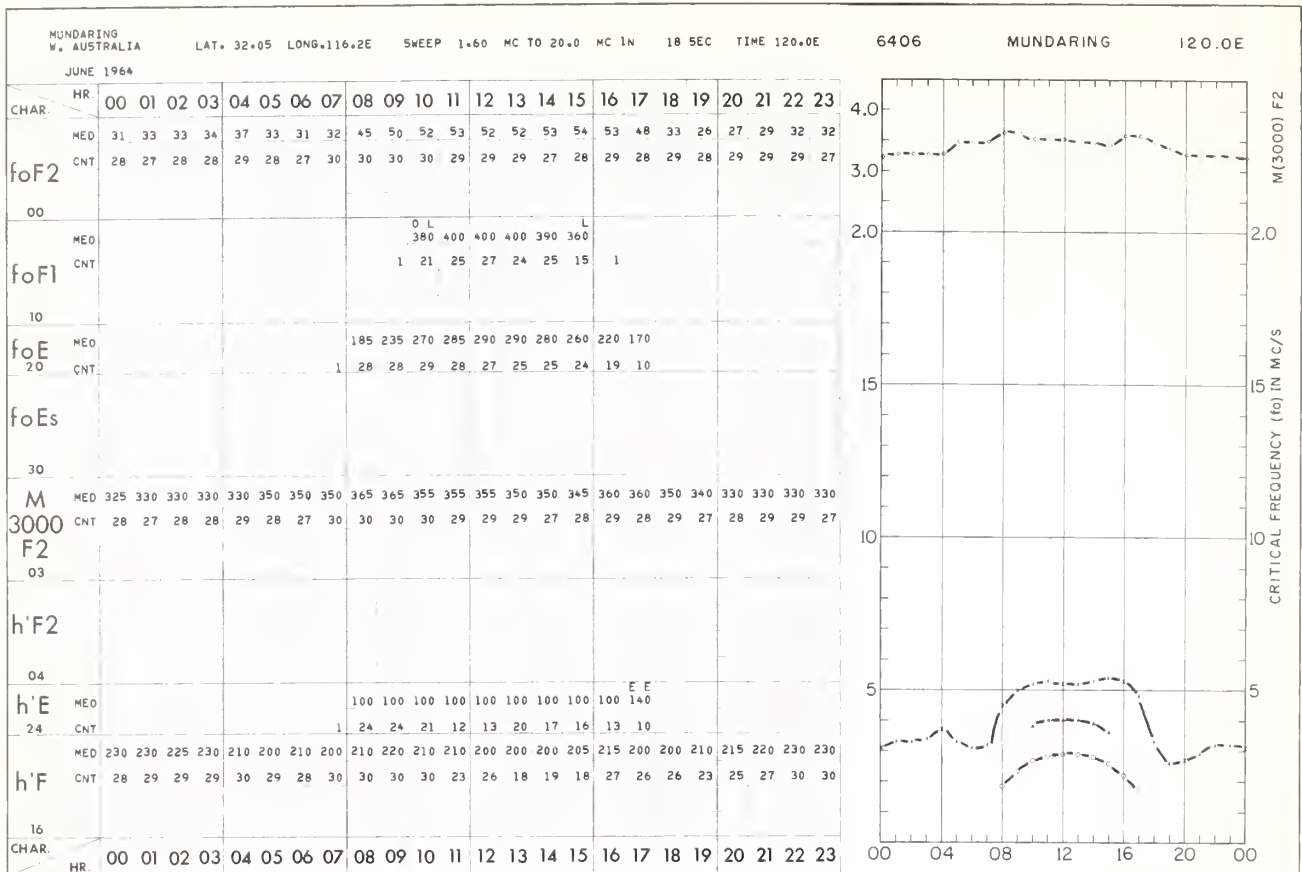




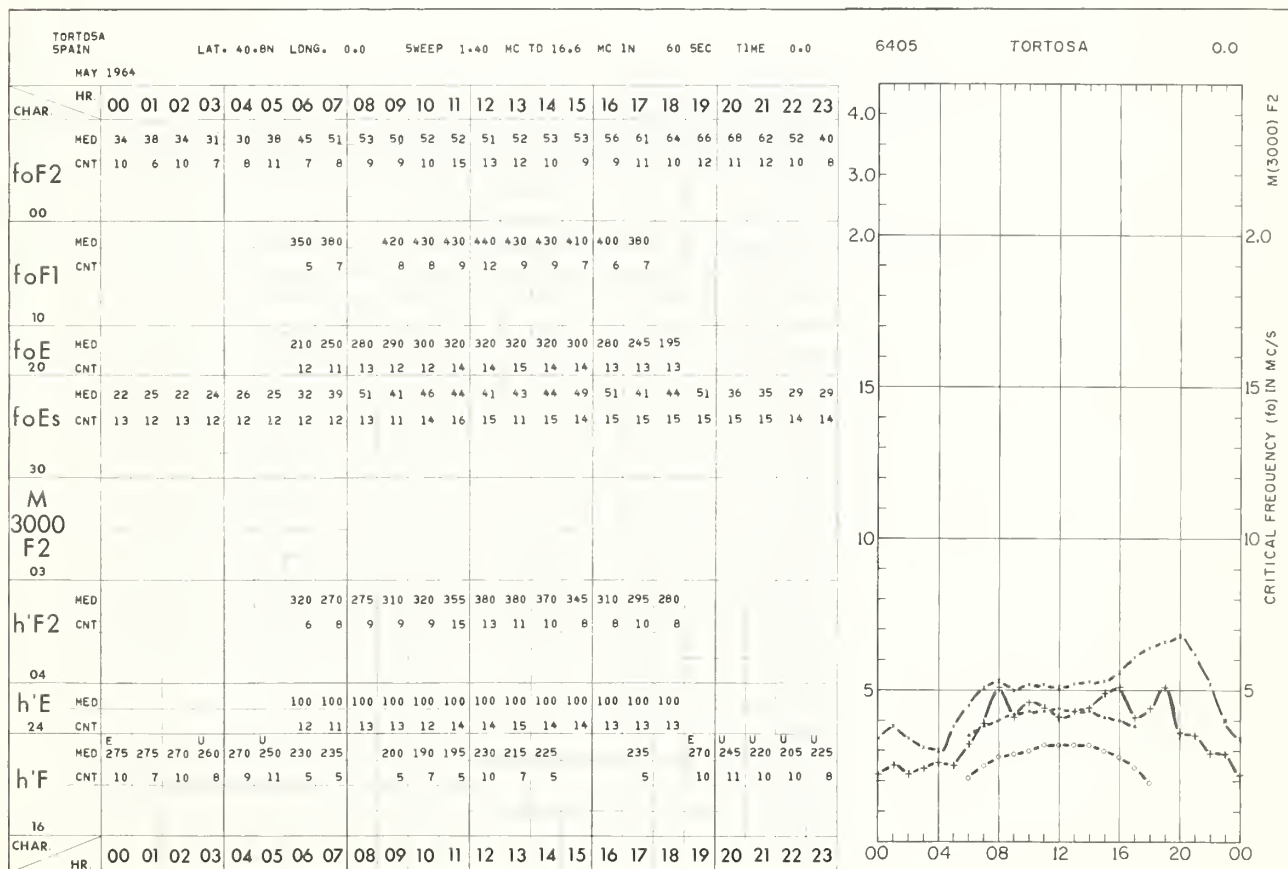
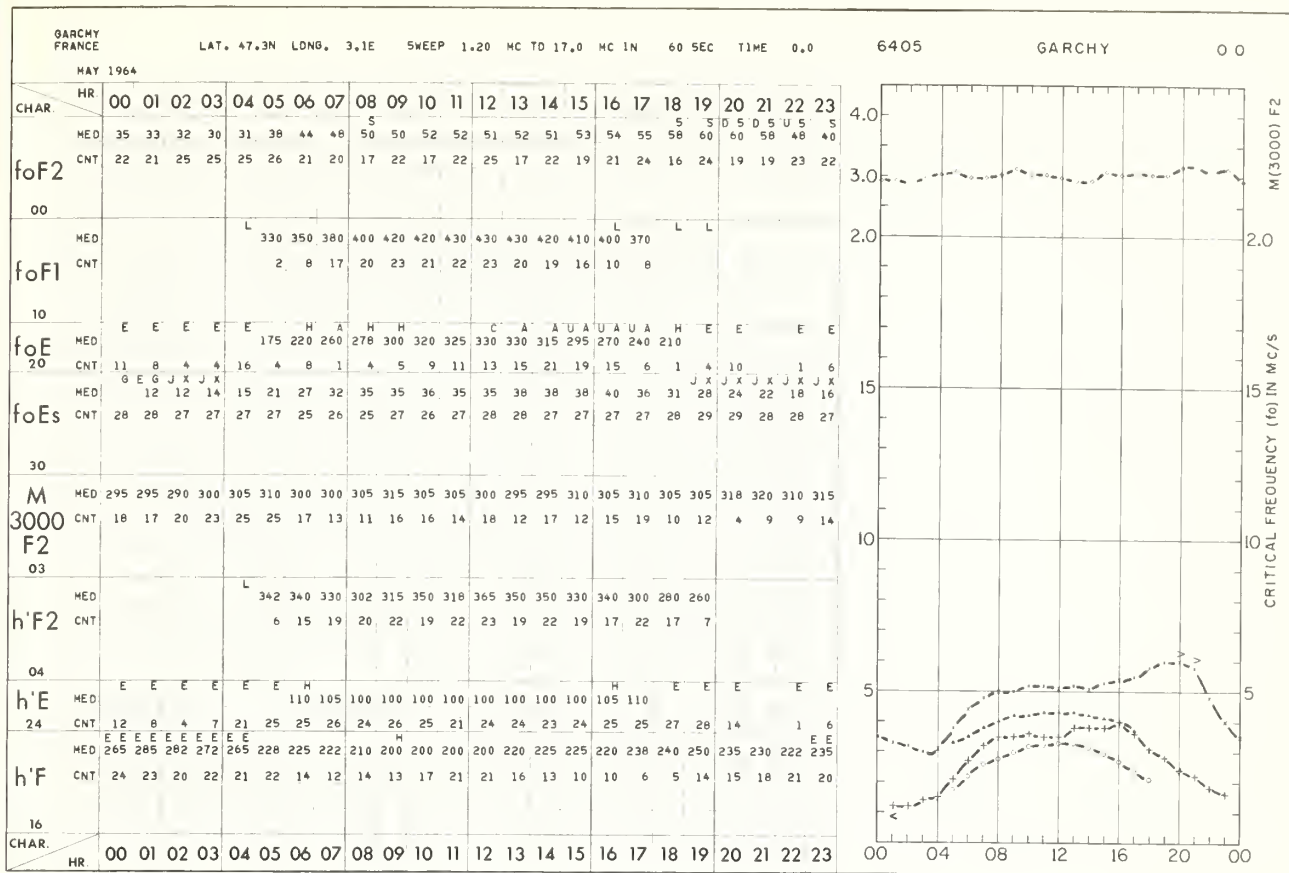


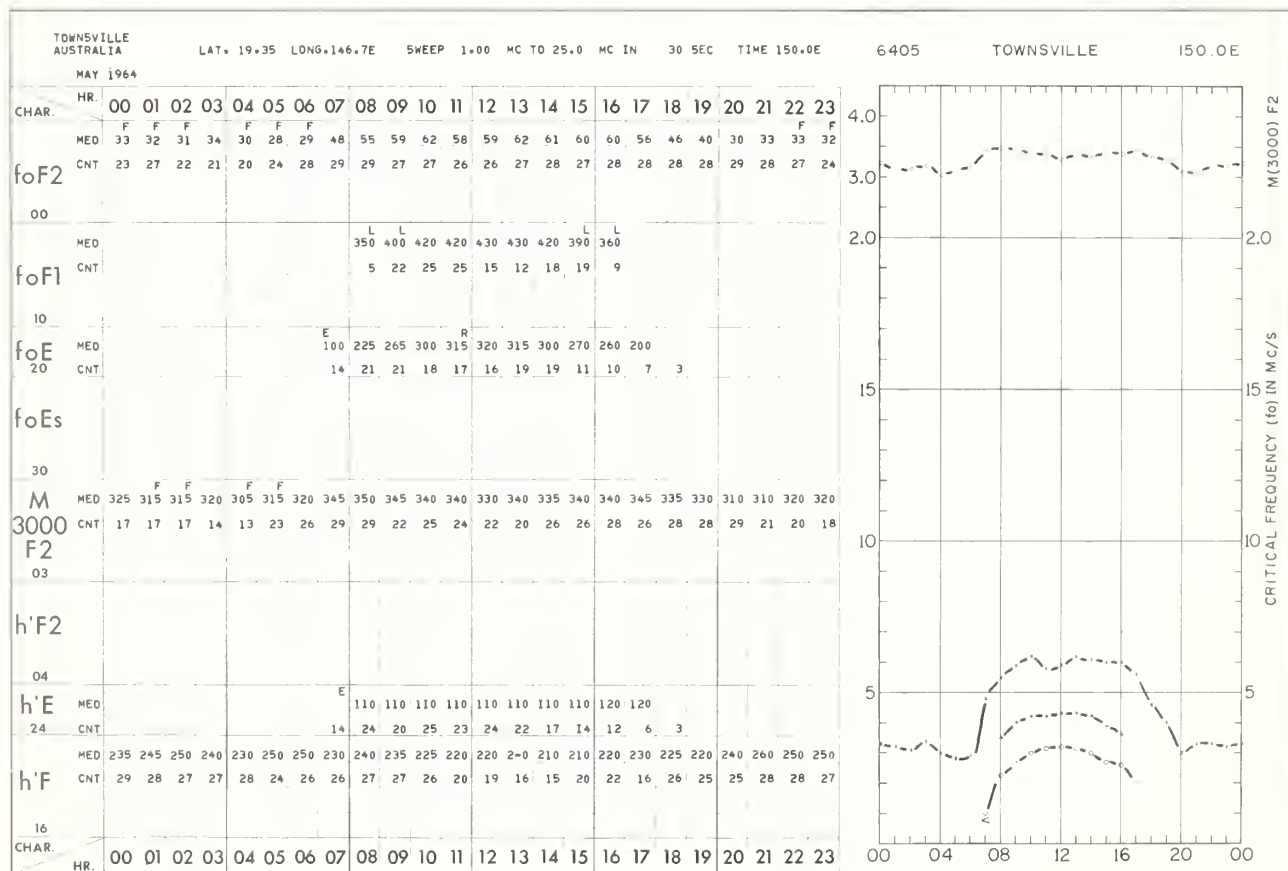
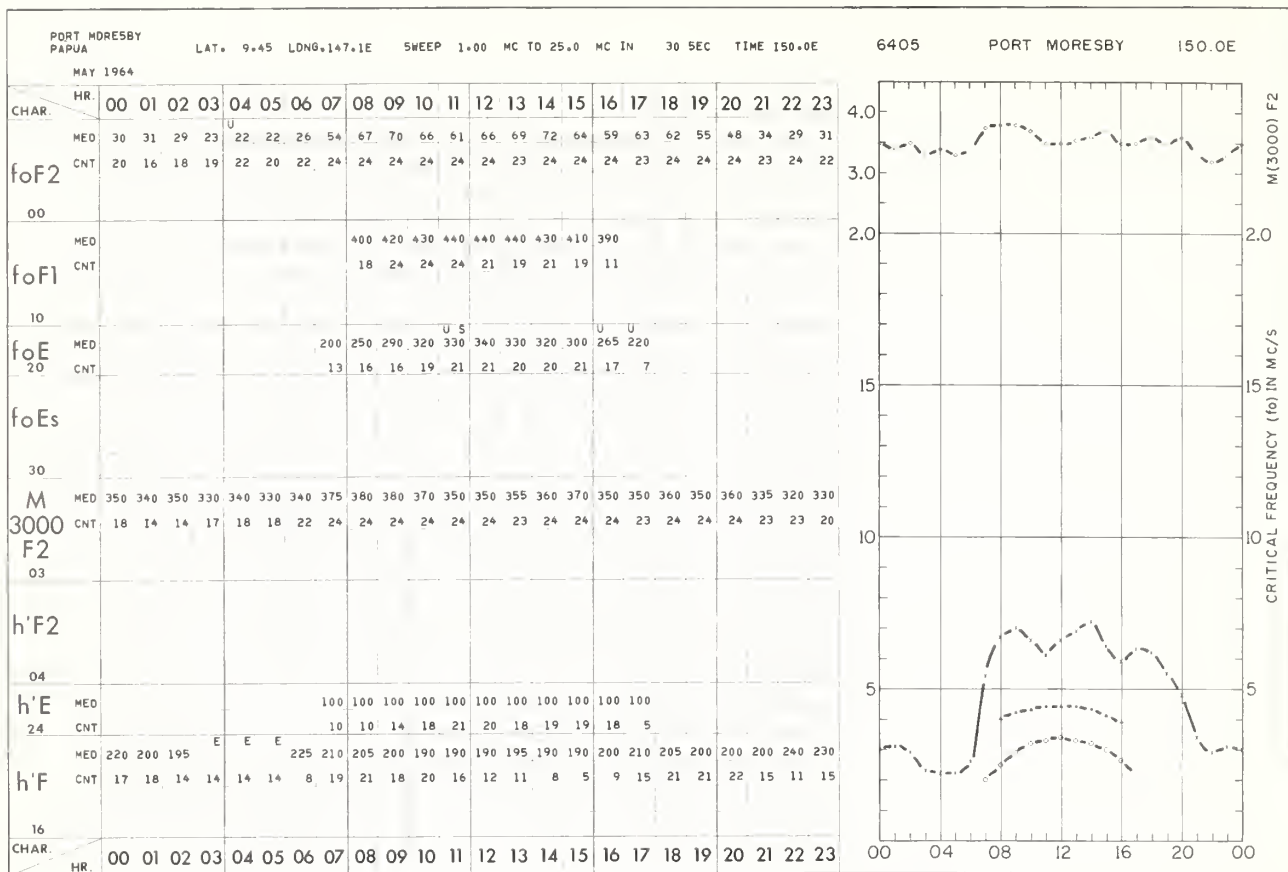


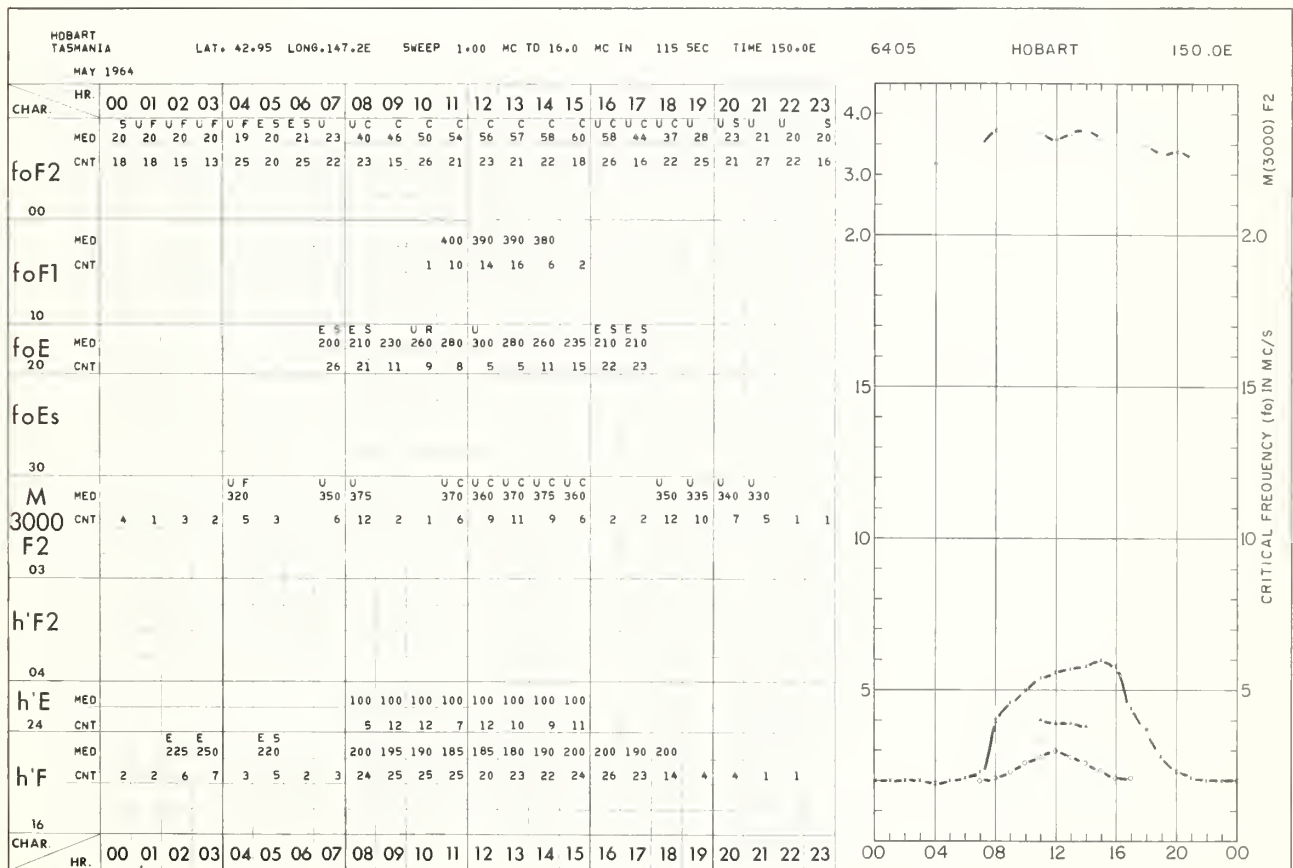
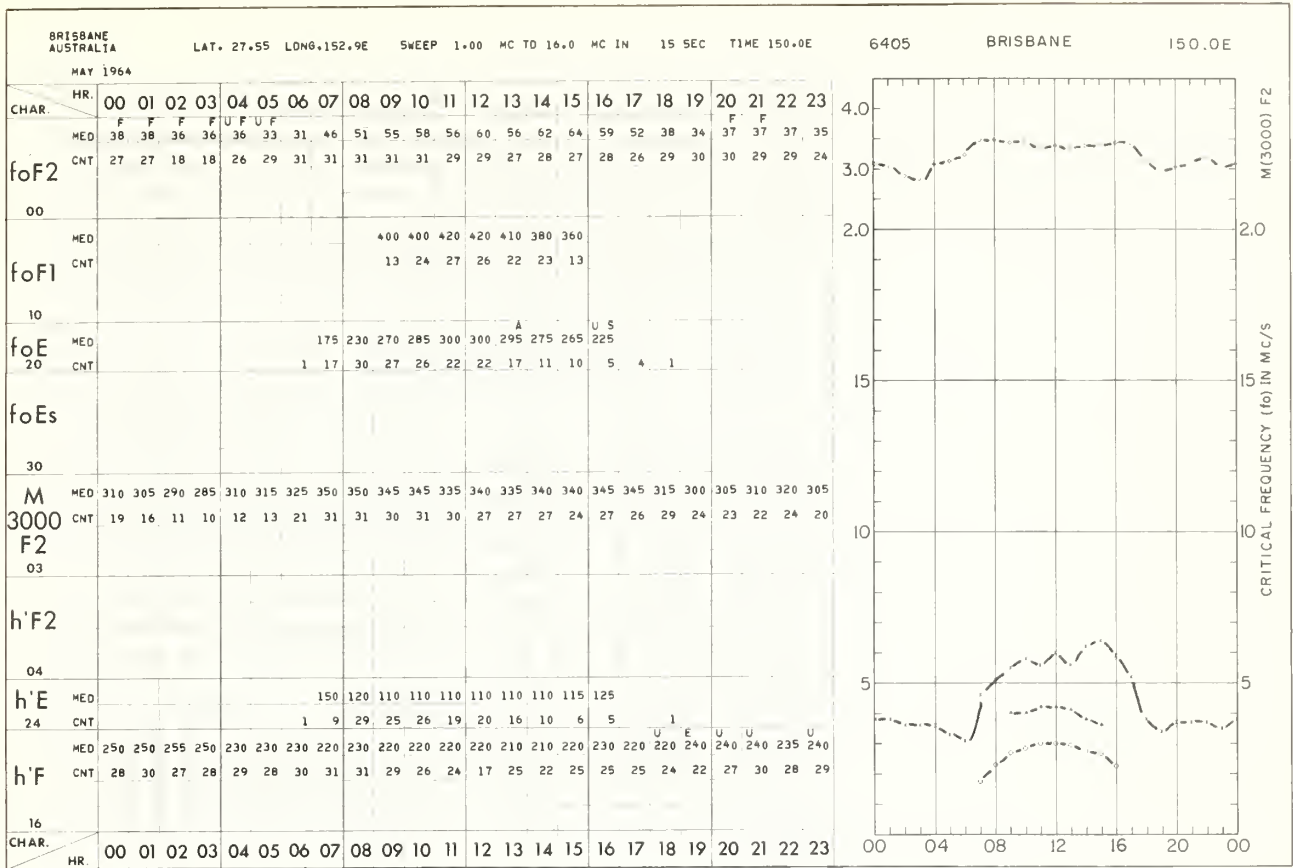


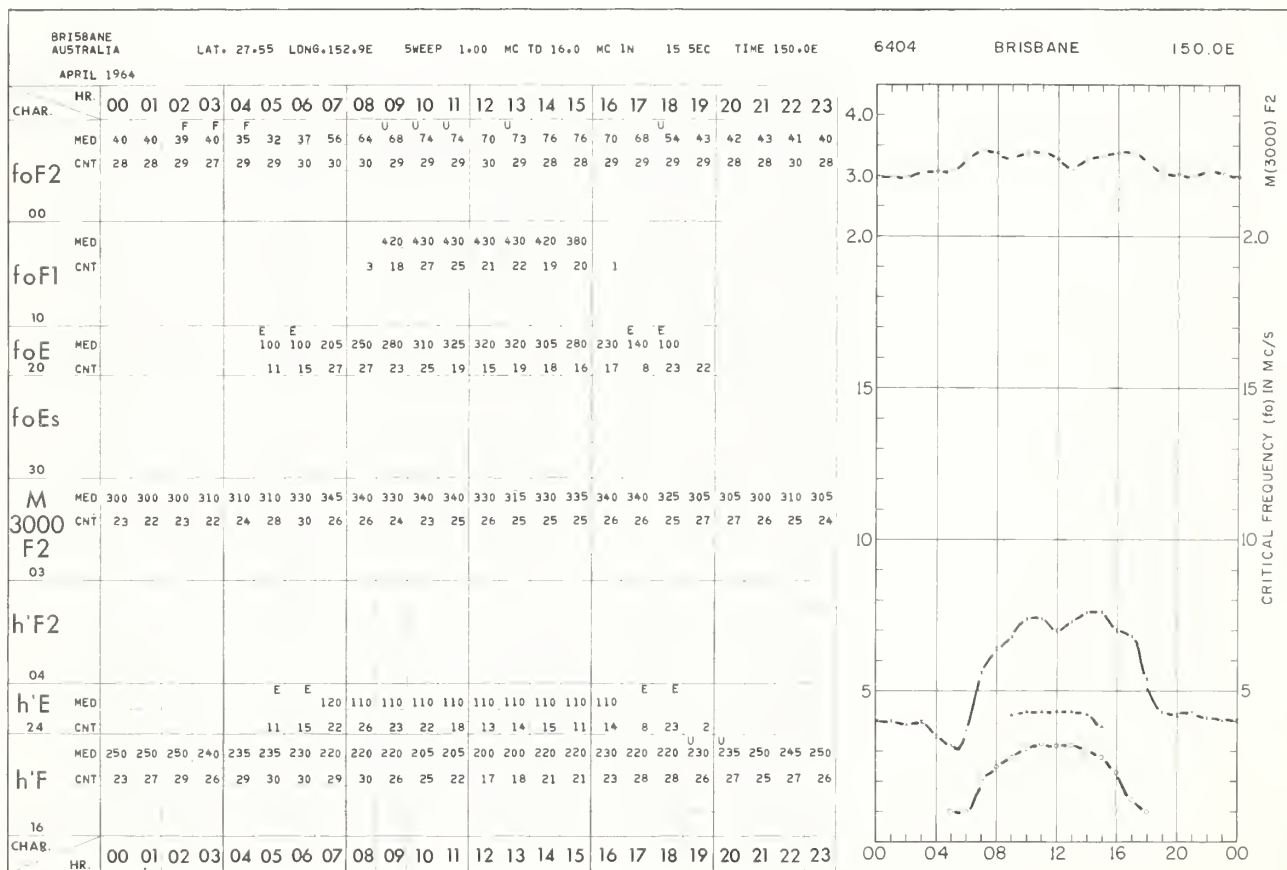
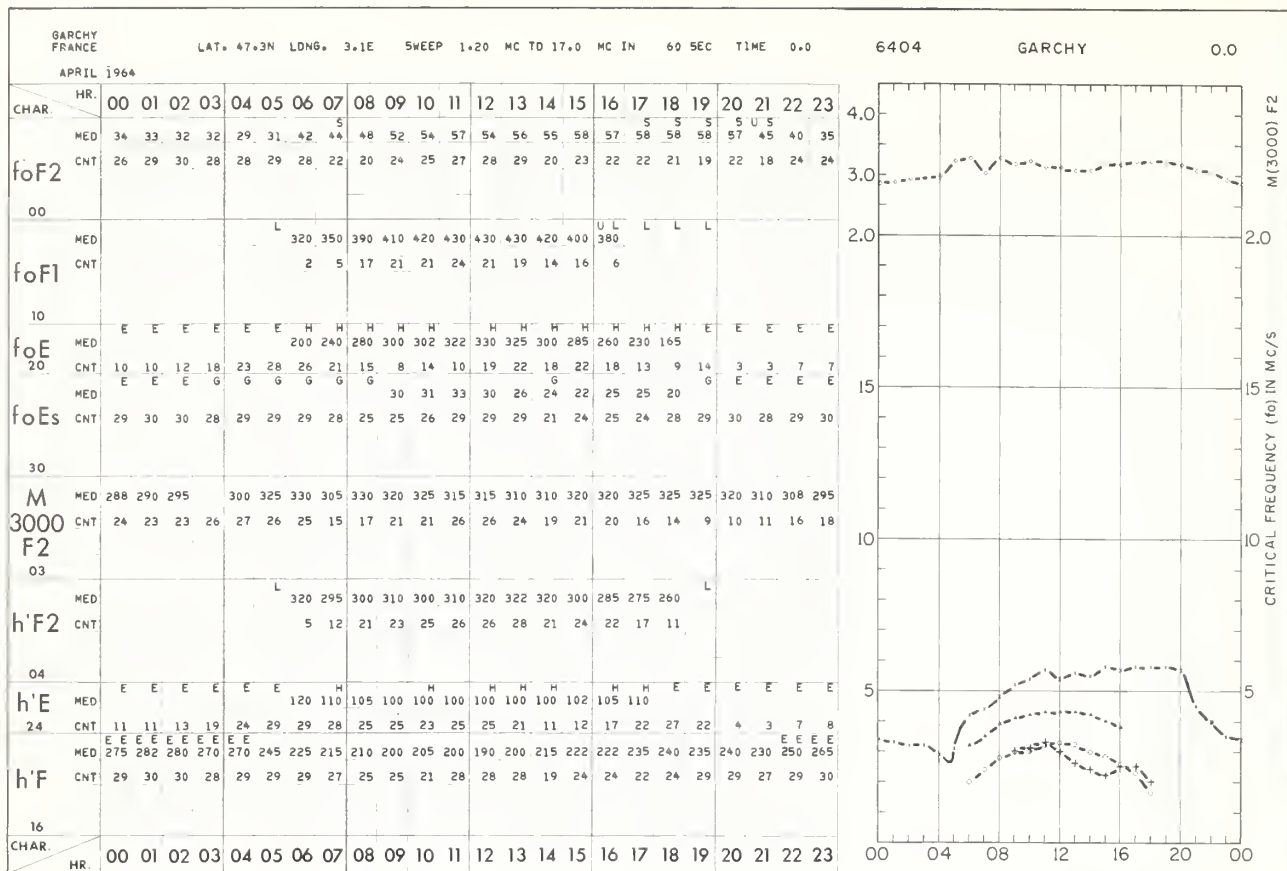




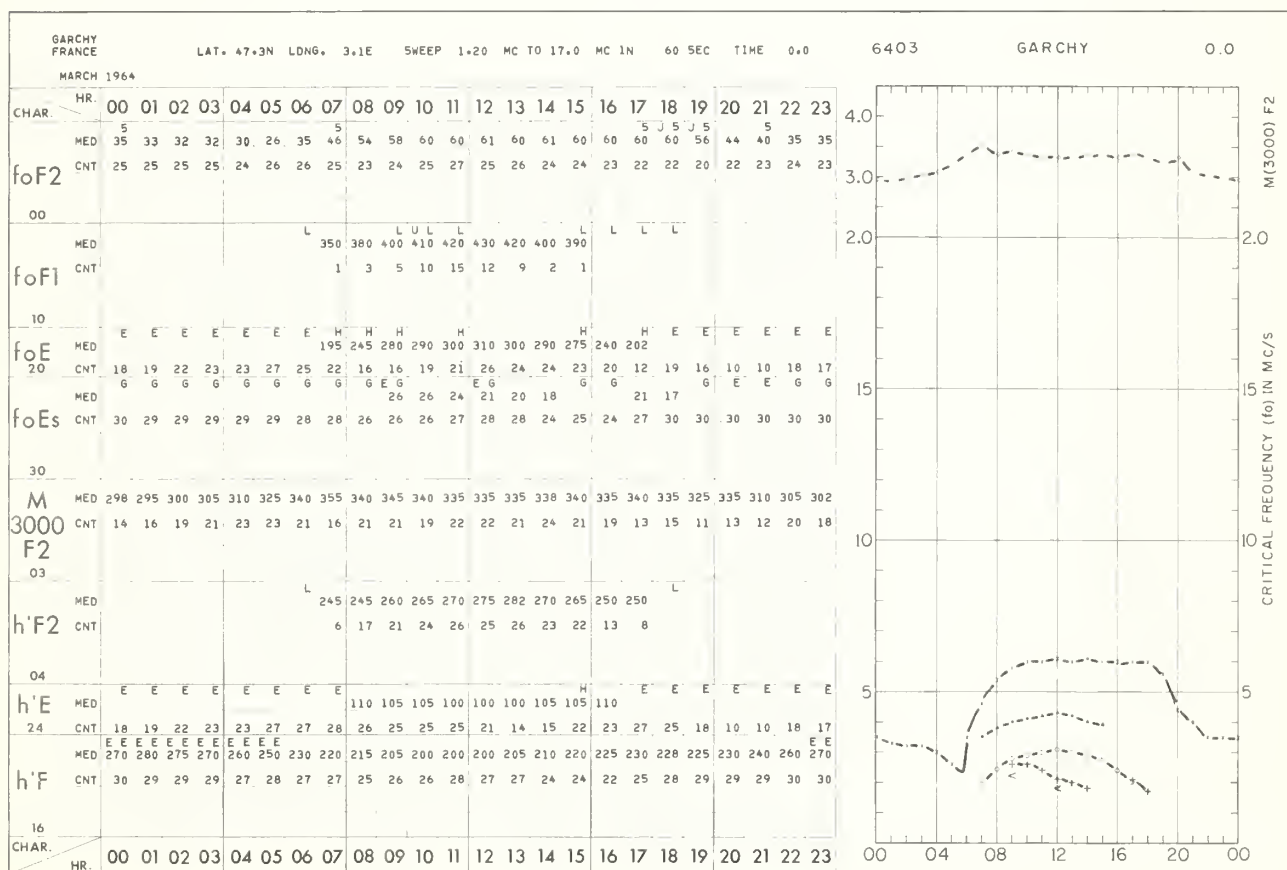
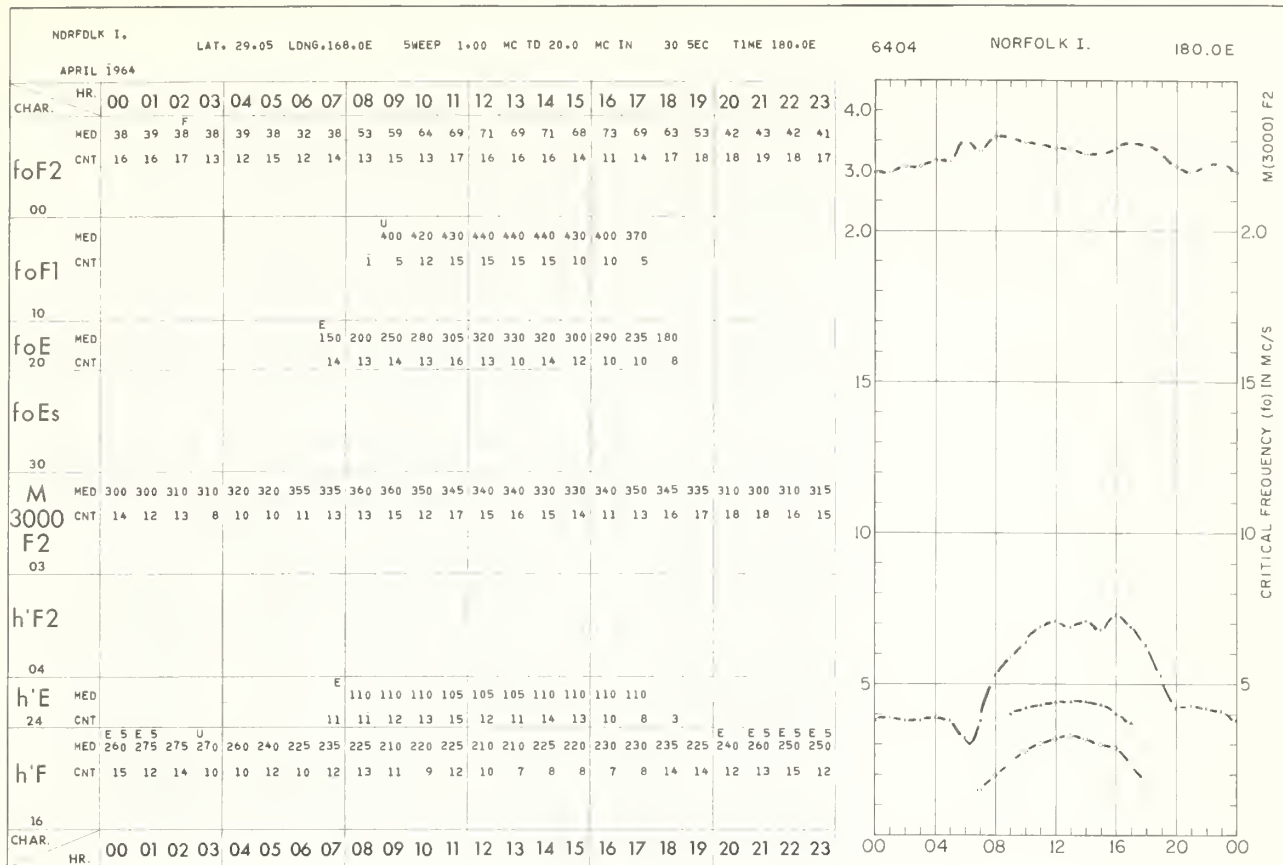


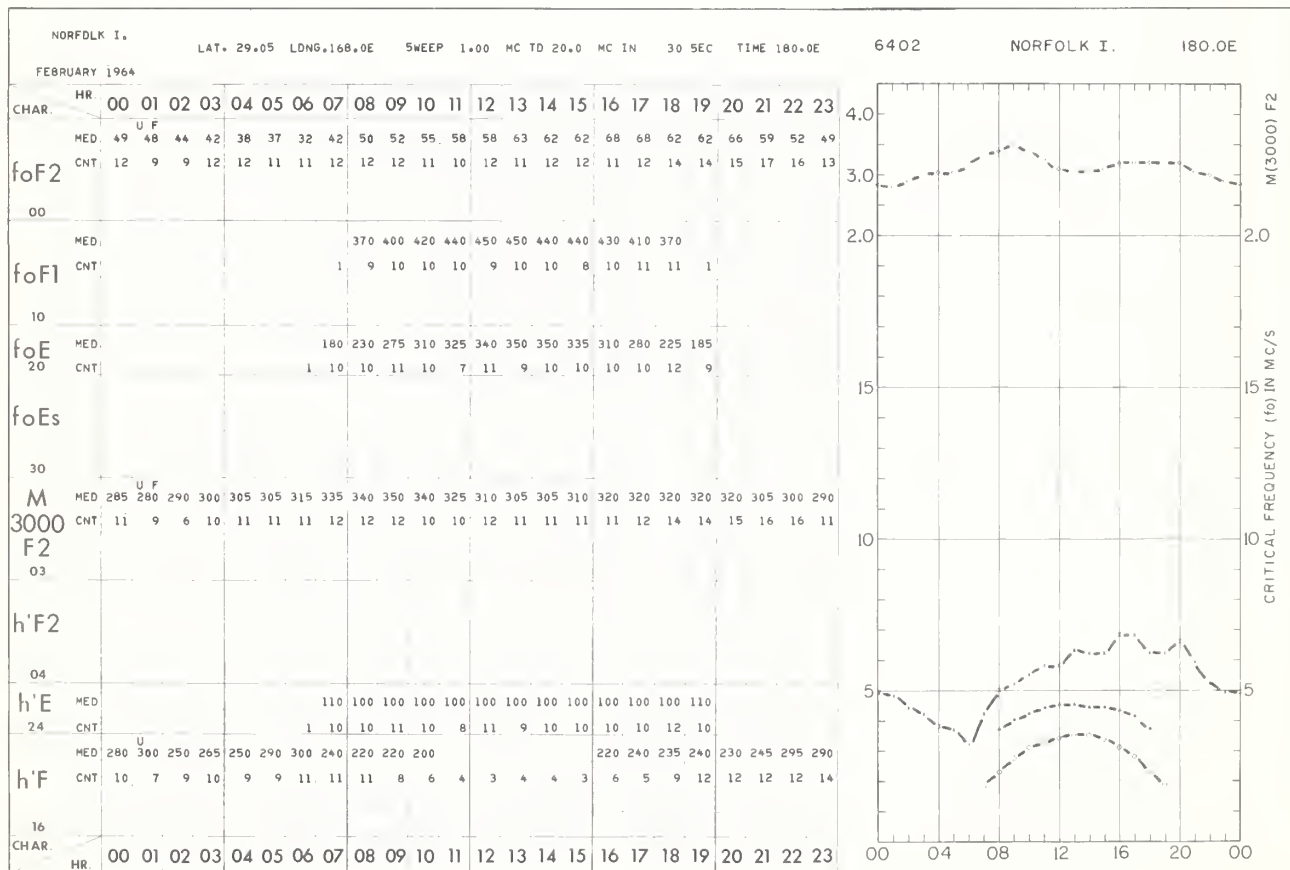
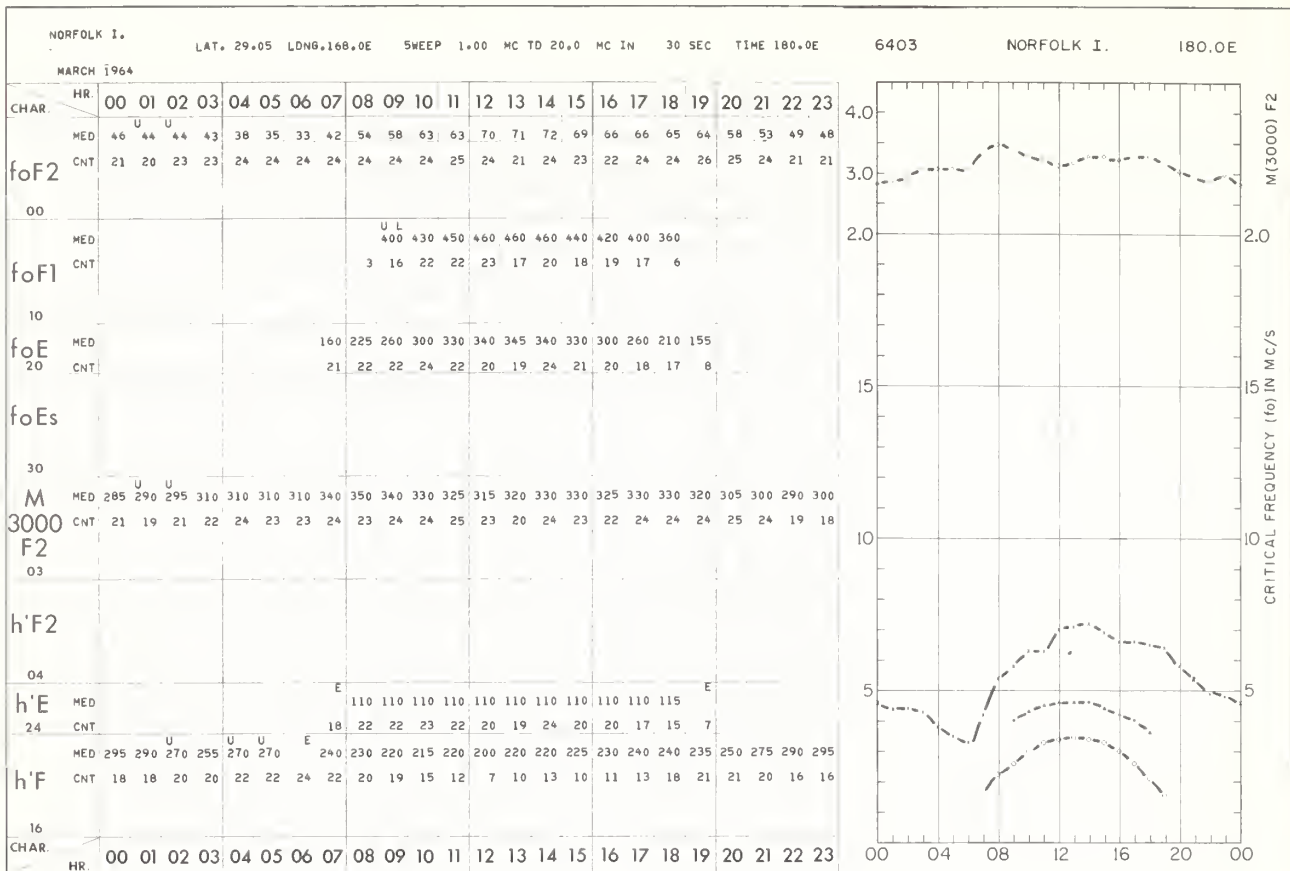












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| ADAK            | ALASKA            | 1965 | APR.  | 10   |
|                 |                   | 1965 | MAY   | 4    |
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|                 |                   | 1965 | MAR.  | 17   |
| ANCHORAGE       | ALASKA            | 1965 | MAR.  | 15   |
|                 |                   | 1965 | APR.  | 9    |
|                 |                   | 1965 | MAY   | 3    |
| BANGKOK         | THAILAND          | 1964 | JULY  | 40   |
|                 |                   | 1964 | AUG.  | 38   |
|                 |                   | 1964 | SEPT. | 35   |
|                 |                   | 1964 | OCT.  | 31   |
|                 |                   | 1964 | NOV.  | 27   |
|                 |                   | 1964 | DEC.  | 24   |
| BARROW          | ALASKA            | 1965 | MAR.  | 15   |
|                 |                   | 1965 | APR.  | 7    |
|                 |                   | 1965 | MAY   | 2    |
| BOGOTA          | COLOMBIA          | 1965 | MAR.  | 18   |
|                 |                   | 1965 | APR.  | 14   |
|                 |                   | 1965 | MAY   | 6    |
| BOULDER         | COLORADO          | 1965 | JUNE  | 1    |
| BRISBANE        | AUSTRALIA         | 1964 | APR.  | 48   |
|                 |                   | 1964 | MAY   | 47   |
|                 |                   | 1964 | JUNE  | 43   |
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|                 |                   | 1964 | DEC.  | 25   |
| COLLEGE         | ALASKA            | 1964 | SEPT. | 33   |
| CONCEPCION      | CHILE             | 1965 | JAN.  | 23   |
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|                 |                   | 1965 | MAR.  | 19   |
| DAKAR           | SENEGAL           | 1964 | JULY  | 40   |
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|                 |                   | 1964 | SEPT. | 35   |
|                 |                   | 1964 | OCT.  | 30   |
| DE BILT         | NETHERLANDS       | 1964 | NOV.  | 26   |
| DJIBOUTI        | FRENCH SOMALILAND | 1964 | OCT.  | 31   |
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| DOORBES         | BELGIUM           | 1965 | APR.  | 10   |
| EL CERILLO      | MEXICO            | 1965 | APR.  | 13   |
| FT. BELVOIR     | VIRGINIA          | 1965 | MAY   | 5    |
| FT. MONMOUTH    | NEW JERSEY        | 1965 | APR.  | 11   |
|                 |                   | 1965 | MAY   | 4    |
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|                 |                   | 1964 | APR.  | 48   |
|                 |                   | 1964 | MAY   | 45   |
| GODLEY HEAD     | NEW ZEALAND       | 1965 | APR.  | 14   |
| GRAND BAHAMA I. |                   | 1965 | APR.  | 12   |
| HOBART          | TASMANIA          | 1964 | MAY   | 47   |
|                 |                   | 1964 | JUNE  | 44   |
| HUANCAYO        | PERU              | 1965 | FEB.  | 21   |

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| JULIUSRUH/RUGEN | GERMANY           | 1964 | NOV.  | 25 |
| KIRUNA          | SWEDEN            | 1965 | APR.  | 8  |
| KOKUBUNJI       | JAPAN             | 1965 | FEB.  | 21 |
|                 |                   | 1965 | MAR.  | 17 |
| LA PAZ          | BOLIVIA           | 1965 | FEB.  | 22 |
| LYCKSELE        | SWEDEN            | 1965 | APR.  | 8  |
| MAUI            | HAWAII            | 1965 | MAY   | 6  |
|                 |                   | 1965 | JUNE  | 1  |
| MOSCOW          | U.S.S.R.          | 1964 | AUG.  | 36 |
|                 |                   | 1964 | SEPT. | 33 |
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|                 |                   | 1964 | NOV.  | 26 |
|                 |                   | 1964 | DEC.  | 24 |
| ROME            | ITALY             | 1965 | APR.  | 11 |
| SCOTT BASE      | ANTARCTICA        | 1964 | NOV.  | 29 |
| SODANKYLA       | FINLAND           | 1965 | MAY   | 2  |
| SOTTENS         | SWITZERLAND       | 1964 | NOV.  | 27 |
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| WARSAW          | POLAND            | 1965 | FEB.  | 19 |
| WHITE SANDS     | NEW MEXICO        | 1965 | MAR.  | 18 |
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## CRPL REPORTS

(A detailed list of CRPL publications is available from the Central Radio Propagation Laboratory on request.)

### Catalog of Data.

A catalog of records and data on file at the U.S. IGY World Data Center A for Airglow and Ionosphere, Boulder Laboratories, National Bureau of Standards, Boulder, Colorado, which includes a fee schedule to cover the cost of supplying copies, is available upon request.

CRPL-F (Part A), "Ionospheric Data."

CRPL-F (Part B), "Solar Geophysical Data."

These monthly bulletins have limited distribution and are sent, in general, only to those individuals and scientific organizations that collaborate in the exchange of ionospheric, solar, geomagnetic, or other radio propagation data of interest to the CRPL. Others may purchase copies of the same data from the U.S. IGY World Data Center A for Airglow and Ionosphere, National Bureau of Standards, Boulder, Colorado.

### "Ionospheric Predictions."

This series of publications is issued monthly, three months in advance, as an aid in determining the best sky-wave frequencies for high frequency communications over any transmission path, at any time of day for average conditions for the month.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. Price 25 cents. Annual subscription (12 issues) \$2.50 (75 cents additional for foreign mailing). (NOTE: Tested sets of punched cards of the predicted numerical coefficients of numerical maps of the Ionospheric Predictions, for use with electronic computers, may be purchased by arrangement with the Prediction Services Section, CRPL, Boulder Laboratories, Boulder, Colorado.)

National Bureau of Standards Handbook 90, "Handbook for CRPL Ionospheric Predictions Based on Numerical Methods of Mapping." Price 40 cents.

NBS Monograph 80, "Ionospheric Radio Propagation." Price \$2.75. (Add one-fourth additional for foreign mailing.)

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